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FINAL RFA REPORT CIBA-GEIGY RCRA FACILITY ASSESSMENT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY Office of Waste Programs Enforcement Washington, D.C. 20460

Work Assignment No.

265

EPA Region Facility I.D. No.

RID001194323

Contract No.

68-01-7331

CDM Federal Programs Corporation Document No. :

T265-R01-FR-BGNC-3 : Versar Inc.

Prepared By

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Date Prepared

: 1/20/88

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CDM Federal Programs Corporation

R£C'D 1-21-88

January 20, 1988

Hans Waetjen Project Officer U.S. Environmental Protection Agency 401 M Street, Room 2834 Washington, D.C. 20460

PROJECT:

EPA CONTRACT NO.: 68-01-7331

DOCUMENT NO.:

T265-R01-EP-BMQJ-1

SUBJECT:

Final RFA Report for Work Assignment 265 Ciba-Geigy, RCRA Facility Assessment Document No.: T265-R01-FR-BGNC-3

Dear Mr. Waetjen:

Please find enclosed the Final RFA Report entitled, "Ciba-Geigy, Cranston, Rhode Island." This deliverable fulfills the reporting requirements for this work assignment.

If you have any comments regarding this submittal, please contact Dennis Guistra of Versar Inc. at (703) 750-3000 within two weeks of receipt of this letter.

Sincerely,

CDM Federal Programs Corporation

∂ohn Walker

TES III Regional Manager

MRK:rf

Enclosure

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Robert Murphy, Versar Inc., Program Manager (letter only)

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1.0 INTRODUCTION

In February 1987, CDM Federal Programs Corporation received a work assignment (CDM WA No. 265) under TES III, U.S. Environmental Protection Agency (EPA) Contract No. 68-01-7731, to provide enforcement support to EPA Region I by conducting a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) of the Ciba-Geigy Corporation chemical manufacturing plant in Cranston, Rhode Island. TES III team member, Versar Inc., accepted the work assignment, conducted the RFA, and submitted, as a deliverable, a final RFA report which develops site specific information supporting potential RCRA enforcement action(s) at the Ciba-Geigy plant. The submission of this final RFA report marks the completion of the RFA and is provided as partial fulfillment of the reporting requirements for this work assignment.

1.1 RFA Objectives

The 1984 Hazardous and Solid Waste Amendments (HSWAs) established broad new authorities to assist EPA in the implementation of the RCRA corrective action program. The primary objective of the RCRA corrective action program is to remediate releases of hazardous waste or hazardous constituents that threaten human health or the environment. The RCRA corrective action program, which applies to all operating, closed, or closing treatment, storage or disposal facilities regulated under Subtitle C (Hazardous Waste Management) of RCRA consists of three phases, the RCRA facility assessment, the RCRA facility investigation (RFI), and corrective measures (CM).

• The RCRA facility assessment is intended to identify and gather information on releases or potential releases at RCRA facilities, evaluate solid waste management units (SWMUs) and other areas of concern for releases to all environmental media, evaluate regulated units for releases to all environmental media other than ground water, make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility, and screen from further investigation those SWMUs which do not pose a threat to human health or the environment.

- The RCRA facility investigation is conducted to fully characterize the extent of identified releases requiring further action.
- Corrective measures (CM) to determine the need for and extent of remedial measures. This phase includes the selection and implementation of appropriate remedies for all problems identified.

This report concerns the RFA, the first phase of the RCRA Corrective Action Program, and provides complete information gathered during each step of the RFA three-stage process. All three steps of the RFA entail the collection and analysis of data to support initial release determinations from SWMUs and other areas of concern located at the facility:

- The preliminary review (PR) focuses primarily on evaluating existing information such as inspection reports, permit applications, SWMU responses, waste manifests, historical monitoring data, and conducting relevant personnel interviews to ascertain the occurrence of potential or actual releases to all environmental media at the facility.
- The visual site inspection (VSI) entails the onsite collection of visual information to obtain additional evidence of releases and identify other areas of concern; confirm the existence of all SWMUs; fill in data gaps identified during the PR; and focus recommendations for further action.
- The sampling visit (SV) fills in data gaps that remain upon completion of the PR and VSI by obtaining sampling and field data. This information is used to determine whether any releases identified warrant further investigation beyond the RFA. The need for a sampling visit is developed and presented as a recommendation based on the findings of the PR and VSI.

The RFA is completed when the assessment has identified and gathered information on all potential releases of concern; evaluated all SWMUs and other areas of concern for releases; made preliminary determinations regarding releases of concern and the need for further enforcement actions at the facility; and screened from further investigation those SWMUs which do not pose a threat to human health or the environment.

1.2 RFA Approach

The PR, VSI, and SV of the Ciba-Geigy Cranston plant were conducted by Versar Inc. in accordance with the final RCRA Facility Assessment Guidance document dated October 1986. During the PR, Versar gathered and evaluated existing information from U.S. EPA Region I and Rhode Island Department of Environmental Management (RIDEM) offices, to identify SWMUs and other areas where wastes have been managed at the facility. Versar examined documents and other written materials to obtain information on the facility's location, waste characteristics, evidence of past releases, and potential environmental receptors. Versar also conducted interviews of federal and state officials knowledgable of site operations and obtained information directly from Ciba-Geigy throughout the RFA.

A preliminary RFA report was prepared and submitted in May 1987 to EPA Region I by Versar upon completion of the PR. This report described facility operations and waste handling activities, identified and evaluated all SWMUs onsite, and provided recommendations for further action at Ciba-Geigy including a VSI and SV to complete the RFA.

A VSI of the facility was conducted on Friday, May 8, 1987 in conjunction with EPA, RIDEM, and Ciba-Geigy. The purpose of the VSI was to visually assess the facility for evidence of release, to ensure that all SWMUs and areas of concern had been identified, to fill in any information gaps remaining after the PR, and to provide specific guidance in developing a SV work plan. Each identified SWMU was examined for the following:

- Unit Characteristics
- Waste Characteristics
- Pollutant Migration
- Evidence of Release
- Exposure Potential

Optimum sampling locations were identified and information necessary to effectively conduct future sampling onsite was obtained. Weather

conditions during the VSI were cool (60°F) and partially overcast with a slight breeze from the west throughout the day. A summary of site activities including photographs taken during the VSI, was presented in a VSI report submitted in June 1987 to U.S. EPA Region I. The report also provided recommendations for further action which included sampling at various SWMUs and area of concern for which additional field information was deemed necessary.

Versar subsequently prepared and submitted an SV work plan in June 1987 outlining sampling locations, sample collection procedures, and analytical requirements for the proposed SV. During the SV which began on Thursday, June 11, 1987 and extended until Friday, June 12, 1987 Versar collected a total of 18 environmental samples including ground water, surface soil, subsurface soil, and river sediment samples. All samples collected by Versar were split with Malcolm Pirnie, Inc. of Paramus, New Jersey, environmental consultants for Ciba-Geigy. All Ciba-Geigy split sample analyses were performed by U.S. Testing, Hoboken, New Jersey. Detection limits and analytical methods were not provided in the results sent to EPA Region I by Ciba-Geigy. EPA samples were analyzed through the U.S. EPA Contract Laboratory Program (CLP) for hazardous substance list (HSL) volatile organic, semivolatile organic, pesticide/PCB, total metal, dioxin, and furan parameters in accordance with the CLP statement of work for organic and inorganic analyses (EPA, 1986b; EPA, 1985). Sampling locations and complete sampling results can be found in Attachment A of this report.

A summary of site activities including photographs taken during the SV, was presented in a SV trip report submitted in July 1987 to U.S. EPA Region I. The report noted that information obtained prior to and during the SV, together with analytical data received from Region I would be used to make release determinations and provide recommendations for each SWMU and area of concern at Ciba-Geigy. The SV conducted by Versar on June 11-12, 1987 was the final step in the RFA process for the Ciba-Geigy

Cranston facility. This final RFA report documents the activities taken during the RFA, and provides final RFA recommendations for further action at Ciba-Geigy.

2.0 FACILITY DESCRIPTION

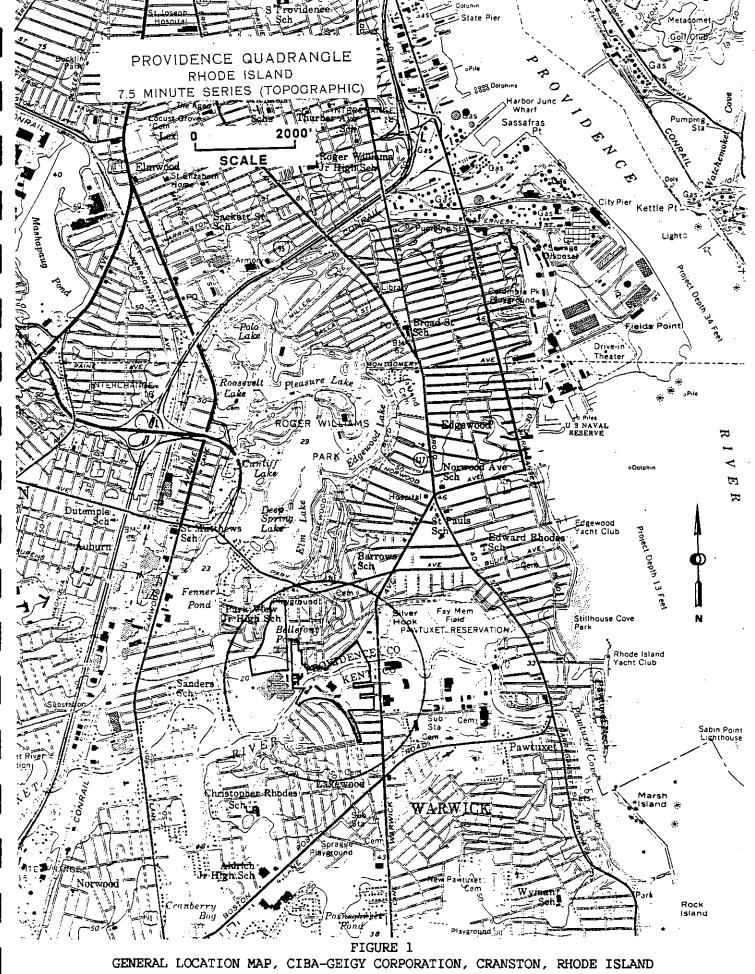
The Ciba-Geigy Corporation chemical manufacturing plant is located at 180 Mill Street, Cranston, Rhode Island, in a small industrial park, adjacent to residential communities of single family houses. The former plant lies in the southeast corner of Cranston approximately 4.5 miles south of downtown Providence in an unsurveyed area of the Providence quadrangle (longitude 70° 24' 25"W and latitude 41° 46' 26"N) (Figure 1). The Providence quadrangle, situated in northeastern Rhode Island at the head of Narragansett Bay, is the most densely populated area in the state and serves as one of the important industrial centers of New England.

Drainage in the southern part of the quadrangle flows eastward into the Providence River estuary by way of the Pawtuxet River and its pond-strewn tributaries, the Pocassett River and Meshanticut Brook. The Ciba-Geigy plant straddles the Pawtuxet River, which is the boundary between the cities of Cranston, Providence County and Warwick, Kent County in this area. Most of the site is within the flood plain of the Pawtuxet River, approximately 1.4 miles from the mouth of the river. The topography of the site slopes toward the Pawtuxet River.

Ciba-Geigy has, in Cranston, 6.8 acres which have been used for production, laboratory, and pilot plant facilities, and another 5.8 acres which was occupied by a biological wastewater treatment plant.

Ciba-Geigy also purchased 23 acres of adjoining property from the Atlantic Tubing and Rubber Company, but this land has not been utilized. In addition to the property in Cranston, Ciba-Geigy has 27.5 acres in Warwick which were minimally developed and utilized for cafeteria, locker room, warehouse, engineering and maintenance facilities, and hazardous waste drum storage (Figure 2).

Ciba-Geigy was permitted to operate as a hazardous waste storage facility under RCRA (EPA ID Number RID001194323) since 1982. The facility's original Part A permit application was submitted to EPA on November 18, 1980. Subsequently, Part B of the permit application was



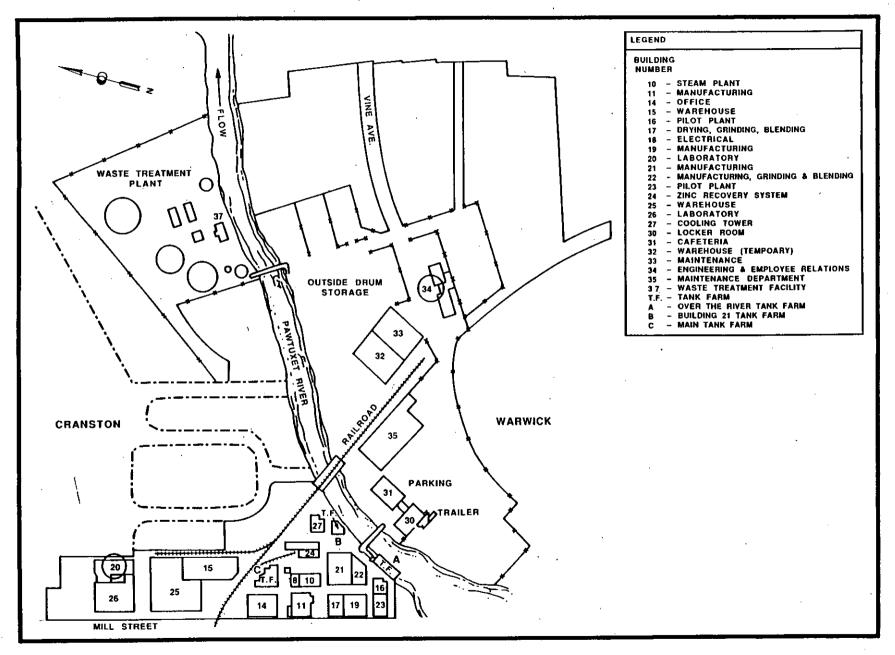


FIGURE 2. SITE PLAN, CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND (CIBA-GEIGY, 1985b)

called by EPA on March 9, 1982, and received September 14, 1982 (EPA, 1984). In February 1986, a public hearing was scheduled by RIDEM regarding the approval of a state hazardous waste permit (EPA, 1986). The state permit was approved but in September 1986 Ciba-Geigy notified RIDEM of its intent to close the facility's hazardous waste storage areas (Ciba-Geigy, 1986).

2.1 Surface Water

Local surface waters in the area consist of several ponds and lakes to the north-northwest of the site. All flow is southerly toward the Pawtuxet River, which flows east into Pawtuxet Cove, and the Providence River. An unlimited quantity of saline water is available in the Providence River and Narragansett Bay. An unnamed stream from Bellefont Pond flows through the former Atlantic Tubing and Rubber Company property and enters the Pawtuxet River just upstream of the Ciba-Geigy facility. Industrial and municipal waste discharges which occur along the length of the river affect flow and make the water unsuitable for use without considerable treatment.

The Pawtuxet River is about 80 feet wide as it passes the plant and flow may be expected to exceed 41 million gallons per day 95 percent of the time. Approximately seven miles upstream from Ciba-Geigy, at River Point in West Warwick, the Pawtuxet River divides into a north and south branch. Discharges from the Scituate Reservoir in Scituate, Providence County and the Flat River Reservoir in Coventry, Kent County, appear to have the most important impact on the north and south branches, where 85 percent of the flow in the north branch at the confluence comes from the Scituate Reservoir and 85 percent of the flow in the south branch at the confluence comes from the Confluence comes from the Plat River Reservoir, at low flow conditions.

The river basin is hilly and contains many lakes, ponds, and reservoirs. Along this basin numerous dams have been constructed which affect flow by regulation and diversion. A dam near the mouth of the

Pawtuxet River assures that fresh water is available above the dams. However, the quality of the water rather than quantity limits the development of the river as a water supply. Major municipal water supply systems which provide all drinking water in the area, including the Ciba-Geigy facility water supply, obtain most of their water from reservoirs on impounded small streams.

There are no private wells in the area around Ciba-Geigy although the availability of ground water from glacial outwash deposits, which underlie most of the Providence quadrangle, is high. Most of the ground water in the quadrangle is utilized for industrial needs (Halberg et al., 1961).

2.2 Area Geology and Hydrogeology

Ciba-Geigy is located in the relatively low lying area adjacent to the Providence River and Narragansett Bay referred to as the Tidewater subarea of the Providence quadrangle (Halberg, et al., 1961). The Providence quadrangle is entirely within the Seaboard Lowland section of the New England physiographic province (Fenneman, 1938). Physiographically, the area is part of the Narragansett Basin which generally ranges in altitude from about 40 feet to about 100 feet above sea level.

Most of the rock units in the Providence quadrangle are utilized as sources of ground water or are potential sources, and therefore may be classified as aquifers. However, on the basis of their capacity to contain, yield and transmit water, the rock units are divided into two groups: those that are consolidated and can yield only small quantities of water from fractures, and those that are unconsolidated and can yield appreciable quantities of water from interconnected pore spaces.

The consolidated rocks of the Providence quadrangle consist of two major groups: sedimentary rocks of Pennsylvanian age in the Narragansett Basin, and igneous and metamorphic rocks of pre-Pennsylvanian age west of the basin. Circulation of ground water in the consolidated rocks is restricted almost entirely to secondary structures such as joints,

fractures, and openings along surfaces of bedding. Since there are minor differences in water-bearing capacity from one group to another among the consolidated rocks, they are considered collectively as a single water bearing unit.

All the consolidated rocks in the quadrangle are dense, compact, and generally have a porosity of less than one percent. Municipal and industrial wells deriving water from the bedrock in the Tidewater subarea yield from less than 1 to about 500 gallons per minute (gpm), according to local variations in the thickness and character of the glacial cover. The range in depth of most bedrock wells is from 70 to 550 feet. The depth to the static water level is generally between 5 and 50 feet below the land surface.

Unconsolidated deposits of glacial drift almost completely cover the bedrock of the Providence quadrangle. The unconsolidated deposits may be grouped into three classes according to their mode of deposition:

(1) glacial outwash, composed of intercalated lenses and beds of clay, silt, sand, and gravel derived chiefly from debris-laden Pleistocene ice and subsequently transported and deposited by melt-water streams;

(2) glacial till, composed largely of unsorted unstratified material (clay, sand, and larger rock fragments commonly referred to as "hardpan") laid down directly by Pleistocene ice; and (3) alluvial, river-terrace and swamp deposits of recent age laid down by streams of the present epoch.

The outwash deposits contain the most productive water-bearing beds in the quadrangle and are the primary source of ground water in the Tidewater subarea. The average field permeability of these beds is estimated to be on the order of 2,000 gallons per day (gpd) per square foot (Bierschenk, 1959). Wells tapping glacial till generally yield only a few hundred gallons per day. No wells are known to tap the alluvial deposits which are discontinuous and incapable of yielding large supplies of water. The lithologic characteristics and water-bearing properties of the geologic units presented above are summarized in Table 1.

TABLE 1 GEOLOGIC UNITS IN THE PROVIDENCE QUADRANGLE AND THEIR WATER-BEARING PROPERTIES (Bierschenk, 1959)

Age		1		· · · · · · · · · · · · · · · · · · ·		
System	Series	Geologic units	Material	Water-bearing properties		
	Recent	Alluvium, river-terrace, and swamp deposits (0-25 ft. thick)	Sand and silt and decayed organic matter.	Not known to be tapped by wells. Discontinuous and thin; hence would not yield large supplies.		
Quaternary		Outwash (0-280 ft. thick)	Unconsolidated stratified and sorted gravel, and, silt, and clay in irregular lenses. Forms thick deposits in most of lowland areas.	Moderately to highly permeable. Yields water readily to properly constructed wells. Unit as a whole affords most of the water currently pumped and potentially available.		
	Pleistocene	Till (0-40 ft. thick)	Boulders, gravel, sand, and clay—unstratified and unsorted. Unconsolidated but compact. Forms thin mantle over bedrock in most of upland areas.	Relatively poor water-bearing material but yields small supplies to numerous large-diameter wells. At present being supplanted for domestic supplies by public-supply system or by wells in bedrock.		
Pennsylvani a n		Rhode Island formation, Wamsutta formation. (0-10,000 ft. thick)	Consolidated sedimentary rocks. Underlie the unconsolidated deposits at depths ranging from 40 to 280 feet in the Narragansett Basin.	and tabular openings along bedding planes, which yield small supplies to drilled wells. Yield depends in part on		
:		Pondville conglomerate (0-100 ft. thick)	Consolidated sedimentary rocks. Grades up- ward into the overlying sandstone and finer grained sedimentary rocks of the Rhode Island formation.	vield of known wells is about 45 gpm.		
Devonian (?) or colder Esmond granite, Scituate granito gneiss, Grant Mills granodicrite, Quartz dicrite, Metadicrite.		gneiss, Grant Mills granodiorite,	Consolidated metamorphic and igneous rocks. Considerably deformed. Commonly massive but schistose along the borders. Upper portion considerably fractured. Underlie the unconsolidated deposits at	Yield small supplies to drilled wells that tap the fractured upper portions or that inter- sect openings along joints at greater depths. Yield depends in part on nature		
Precambian (7)	Blackstone scries	Hunting Hill greenstone, Westboro (?) quartzite.	average depth of 30 feet in western upland.			

Because the Providence quadrangle is largely an urban area, the surficial geology is greatly obscured and the outwash-plain deposits are poorly exposed. West of the Providence River in the Tidewater subarea much of the outwash consists of thin beds of sand overlying finer materials interbedded locally with deposits of sand and gravel. The outwash occupies and overlies preglacial river channels, along which the deposits reach their greatest thickness. Since the best places to obtain large quantities of ground water are where the outwash is the thickest (and most permeable) the best supplies of ground water can be found in these preglacial river channels. The deposits in the buried preglacial channel near the Pawtuxet River are up to 280 feet thick. Wells tapping deposits in this buried channel would be capable of yielding about 1,300 gpm (Halberg, et al., 1961).

Typically, wells tapping outwash in the Tidewater subarea have ranged in depth from 10 to 150 feet. The depth to static water level is between 5 and 30 feet below the land surface. The unconsolidated deposits beneath the outwash plains are unconfined. Except in localized areas, the upper surface of the zone of saturation is free to rise and fall with changes in ground-water storage. Ground water is recharged largely by infiltration of rainfall and snowmelt within the Tidewater subarea as well as the rest of the Providence quadrangle.

Contamination of ground water by encroachment of salt water may occur in areas adjacent to the sea or saline estuaries if ground-water levels are drawn below sea level and hydraulic continuity exists between the salt water body and the aquifer from which water is pumped, or if the seaward extension of the aquifer already contains salt water.

No information was obtained during the PR regarding the quality of ground water or the specific geologic units directly below the Ciba-Geigy facility. Toluene is known to have been released onsite in at least one area. Toluene was detected in ground-water samples collected by

Ciba-Geigy near a sump in one of the facility buildings (Section 4.11). During the VSI, several recently installed ground-water level measurement pipes were noted throughout the facility. However, no monitoring wells are known to exist onsite. EPA did not require Ciba-Geigy to initiate a ground-water monitoring program during plant operations (Ciba-Geigy, 1984). Ground-water samples were collected by Versar from selected ground-water level measurement pipes during the SV to determine the presence of contaminants and identify potential releases. Ambient air monitoring, using a photoionization unit, at the openings of the ground-water pipes revealed the probable presence of volatile organic compounds (VOCs). The photoionization analyzer used was capable of detecting (in the parts per million range) organic and some inorganic compounds with ionization potentials at or below 10.7 electron volts (eV). Analytical results of the ground-water sampling are presented in Section 6.3.

3.0 FACILITY OPERATIONS

3.1 <u>Current Operations</u>

All chemical manufacturing operations at the Ciba-Geigy Cranston plant ceased as of May 1986. Ciba-Geigy is currently in the process of closing the facility and dismantling the plant. Concern has been expressed that Ciba-Geigy is going to close the facility and leave the site with hazardous waste remaining in the surrounding environment. Ciba-Geigy has submitted specifications for clean up and a proposal for certification of closure to the Rhode Island Department of Environmental Management, Division of Air and Hazardous Materials.

It is the intent of Ciba-Geigy that all facilities at the Cranston plant which have been used for the storage, transfer and/or manufacturing of chemical materials be cleaned and decontaminated as required, so that upon closure, the entire facility could be used for other purposes. This work includes the clean up of two areas used for the storage of hazardous waste, the waste drum storage area and the waste solvent holding tank. Upon completion of closure and post-closure activities, Ciba-Geigy may still be responsible for corrective action under the RCRA Corrective Action Program depending upon the results of the RFA and/or further investigations.

3.2 <u>Historic Operations</u>

3.2.1 Facility History

From 1930 to 1949, the Alrose Chemical Company occupied part of the present plant site in Cranston now known as Ciba-Geigy. In 1949, Geigy Chemical Corporation of Ardsley, New York, purchased the land from Alrose Chemical and operated the facility as the new chemical manufacturing headquarters for all Geigy chemicals. Over the years, the plant grew in terms of production capacity as well as process and product development capability. Eventually demand rose beyond the capacity of the plant and production was transferred to other major facilities built by Geigy Chemical.

In October 1971, Geigy Chemical merged with Ciba Corporation of Summit, New Jersey, to form Ciba-Geigy Corporation, a wholly owned American subsidiary of Ciba-Geigy Limited, headquartered in Basel, Switzerland. The Cranston plant, after the merger, was used as a pilot/start up facility designed and built for manufacturing almost any organic chemical on a batch type basis. In January 1984, Ciba-Geigy announced plans for a gradual phase out of the Cranston plant as part of an overall consolidation of Ciba-Geigy's chemical manufacturing operations. As of May 1986, Ciba-Geigy had ceased all chemical manufacturing operations at the site and begun dismantling of the facility.

Since Geigy Chemical Corporation began operation at the site in 1949, the practice of supplying small volumes of specialized products has led to the production of a vast array of chemicals. Major product lines were:

1950s - dye stuffs, tanning and agricultural products

1960s - plastic additives, ultraviolet (UV) brighteners, and pharmaceuticals

1970s - pharmaceuticals and agricultural products

1980s - pharmaceuticals and plastic additives

Ciba-Geigy is currently a diversified chemical company engaging principally in the discovery, development, manufacture, and marketing of a wide variety of special purpose chemicals and chemical products throughout the United States.

3.2.2 Process Operations

The Cranston plant of Ciba-Geigy Corporation was a batch process, multi-product, fine organic chemical, and pharmaceutical manufacturing operation utilizing approximately 500 raw materials to produce nearly 150 finished products and numerous intermediate products. These products were manufactured utilizing common equipment. Typical operations

included organic synthesis, crystallization, distillation, isolation by filtration, drying and grinding. Major process facilities included:

- Manufacturing Building 21/22
- Manufacturing Building 17/19
- Manufacturing Pilot Plant 16/23
- Zinc Recovery System Building 24
- Manufacturing Building 11
- Cooling Tower and Pump House, Building 27
- Waste Treatment Plant, Raw Waste Sump, and all underground pipes and sumps

Specific information regarding unique manufacturing processes has been maintained confidential by Ciba-Geigy in order to protect trade secrets. In general, since all chemical processes are centered around the chemical reactor, a batch reactor (process vessel) takes in all necessary reactants (raw materials) at the beginning and processes them according to a predetermined course of reaction (to yield the desired product or products) during which no material is fed into or removed from the reactor. Usually the reactor is in the form of a tank and is used primarily in small-scale production. Reactors at Ciba-Geigy were manifolded on any given building and emissions passed through condensers and either an acid or caustic and/or water scrubber. Cooling water was predominantly recycled.

The nature of organic chemical reactions run by Ciba-Geigy were such that by-products were formed consequentially and more by-products were generated in the purification of the products. Of the more than 300 processes Ciba-Geigy may have been involved with to form desired products, approximately 70 waste streams, classified as hazardous waste under RCRA (40 CFR 261), were generated. These wastes were mostly-listed chlorinated and unchlorinated solvents, and unlisted ignitable solvents, as well as other chemicals. Details regarding sources of pollutants were not available by stream source due to the batch nature of plant processes and the high variability of the processes which may have been running in the multipurpose equipment at any given time.

The substances presented in Table 2 were used as raw materials or were produced as by-products during manufacturing operations (Ciba-Geigy, 1985b) and subsequently may have been present in process wastes. Up to three million pounds per month of chemicals were used to produce about one million pounds per month of finished products.

Major plant products manufactured in 1982 included:

Plastic stabilizers	'Irganox' Tinuvin	Added to plastics to help resist deterioration from environmental exposure
Bacteriostats	Irgasan	Used in soap, deodorants, anti-perspirants, fabric softeners, and household cleaners to inhibit bacterial growth
Photochemicals	'Ilford	Used in making color prints from color slides at home
Film forming foams	<u>Lodyne</u>	Used in both fire-fighting and surface coating operations
Pharmaceuticals '	30 different active ingredients	Used in medicines prescribed in the treatment of arthritis, hypertension, depression, epilepsy, and gout

During chemical manufacturing operations improved solvent recovery operations and water pollution control equipment were implemented to reduce the waste load in process water. Concentrated by-products and solvents were recycled and recovered where possible, while spent solvents and other wastes that could be collected in significant quantities were containerized and stored onsite for ultimate offsite disposal. On occasion, concentrated materials were neutralized or chemically reacted to reduce the degree of hazard by utilizing normal production equipment (Ciba-Geigy, 1985b). Chemicals that appeared in the plant's process wastewater were predominantly from vacuum jets, wash vacuum pumps, and air pollution control scrubbers.

TABLE 2 RAW MATERIALS AND BY-PRODUCTS PRODUCED DURING MANUFACTURING OPERATIONS AT CIBA-GEIGY, CRANSTON, RHODE ISLAND (Ciba-Geigy, 1985b)

Acetic Acid
Acetic Anhydride
Acrylonitrile
Aluminum Sulfate
Ammonia
Aniline
Butyric Acid
Calcium Hypochlorite
Chlorobenzene
Chloroform
Chlorosulfonic Acid
Chromic Sulfate
Cresol
Cupric Acetate

Cyanogen Chloride
Cyclohexane
Diethylamine
Dimethylamine
Epichlorohydrin
Formaldehyde
Formic Acid
Hydrochloric Acid
Maleic Acid
Maleic Anhydride
Methyl Acrylate
Naphthalene
Nitric Acid
Nitrobenzene
Phenol

Phosphoric Acid
Potassium Hydroxide
Potassium Permanganate
Silver Nitrate
Sodium Hydrosulfide
Sodium Hydroxide
Sodium Hypochlorite
Sodium Nitrite
Sodium Phosphate
Sulfuric Acid
Toluene
Triethylamine
Xylene
Zinc

In January 1970, RIDEM issued an Order of Approval to Ciba-Geigy for the construction of a wastewater treatment plant. Construction of an onsite biological treatment system was completed in 1972. More than 1,000,000 gallons per day of process wastewater was treated by screening, neutralization, biological oxidation, chlorination, and clarification through this system before being discharged to the Pawtuxet River. Table 3 indicates the water flow from process buildings to the treatment plant estimated on a daily basis during 1981 (Ciba-Geigy, 1981a).

As a result of manufacturing operations, process air emissions constituted another major pollutant pathway. Air pollution control devices were installed in the 1950s on all process air emitting equipment to protect the air quality surrounding the plant. All manufacturing buildings were equipped with special purpose and general purpose scrubbers for air emissions control. In 1981, at least 12 stacks were used to discharge to the atmosphere, each of which was controlled by at least one scrubber (RIDEM, 1981). In 1984, Reasonably Available Control Technology (RACT) limitations were due to be implemented by RIDEM on all facilities that emit 100 tons or more of volatile organic compounds in compliance with U.S. EPA Clean Air Act amendments. Ciba-Geigy was required to study the installation and operation of all VOC-emitting process equipment in a manner that constituted RACT.

3.2.3 Hazardous Waste Management Practices

Since 1949 when Geigy Chemical Corporation began operation at the site, there has been no disposal of any waste from chemical manufacturing on the plant site (Ciba-Geigy, 1985). Some coffee grounds, gypsum, and carbon residue may have been landfilled along the southern portion of the property during early operations by predecessors of Geigy Chemical. These materials were excavated during the construction of buildings erected since 1954 (Ciba-Geigy, 1985).

No wastes generated offsite were accepted by the facility. All hazardous wastes generated by Ciba-Geigy and stored at the facility were

TABLE 3 WATER FLOW TO THE TREATMENT PLANT, CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND (Ciba-Geigy, 1981a)

		SCRUBBERS			· MISCELLANEOUS (Values Allocated	
BUILDING NUMBER	VACUUM JETS	GENERAL VENT	CONCENTRATED	NASH VACUUM PUMPS	On Basis Of Square Feet of Building)	TOTAL
21	94,000	29,000	1,000	130,000	69,000	323,000
19/17	76,000	58,000	1,000	86,000	75,000	296,000
11	38,000	72,000	1,000	69,000	37,000	217,000
22	38,000	29,000	0	43,000	42,000	152,000
23	28,000	29,000	1,000	52,000	30,000	140,000
16	19,000	14,000	1,000	9,000	14,000	57,000
24	0	0	1,000	0	2,000	3,000
Totals	293,000	231,000	6,000	389,000	269,000	1,188,000

regularly shipped to approved disposal areas offsite. The facility shipped over four million pounds of hazardous waste each year, most of it by 10,000-gallon railroad cars to one of Ciba-Geigy's southern facilities for incineration. Additional wastes were sent to various disposal facilities in Ohio, New Jersey, and Louisiana.

Ciba-Geigy operated its hazardous waste storage facility prior to 1982 and was allowed to continue operating under interim status until an application for a Hazardous Waste Treatment and Storage Facility permit (for storage greater than 90 days) was approved. Ciba-Geigy stored wastes onsite in 55-gallon steel drums and in a 6,000-gallon steel tank. The drum storage area had a maximum capacity of 768 fifty-five gallon drums which were used to contain various wastes including flammable solids, coil-containing PCBs, corrosive solids, distillation sludge, chloroform, polychlorinated organics, flammable liquids, alcohol, and polyimides. The 6,000-gallon tank was used to store a solvent waste mixture comprised of varying solutions of toluene, xylene, naphthalite, acetone, monochlorobenzene, isopropanol, heptane, methanol, ethanol, and water.

The expected maximum inventory of wastes in storage at any given time during the operating life of Ciba-Geigy's Cranston plant was 48,290 gallons:

Drums: Flammable solids 13,200 gallons Flammable liquids 26,400 gallons Corrosive solids 2,640 gallons Tank: Solvent solutions 6,000 gallons

Waste manifests from 1981 through 1986 examined during the PR showed that wastes were principally transported offsite according to the classifications in Table 4.

As of November 1986, the drum storage area and waste solvent storage tank had been subjected to a cleaning process which resulted in the removal and disposal of all hazardous waste from these locations (OHM, 1986).

TABLE 4 WASTE MANIFEST CLASSIFICATIONS FOR OFFSITE DISPOSAL AT CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND

Acetone solution
Asbestos
Chloroform
Corrosive material
Corrosive solids
Corrosive waste
Cyanuric chloride
Ether
Filter media
Flammable liquid
Flammable solid

Fuel oil
Halogenated organic solid
Hazardous solid waste
Heptane
Methanol solutions
Methyl acrylate
Naphtha
Naphthalene
Naphtha solutions
Organic sludge
Organic solids

PCB
Poison B
Polychlorinated organics
Polyglycol
Process samples
Substituted pyrozolidane
Sulfuric acid
Toluene solutions
Waste organic mixture
Waste solvents
Xylene solutions

During closure of the facility, certain materials either generated during closure activities or stored onsite but not classified as waste, such as raw materials and intermediates, required further use of appropriate waste management practices.

4.0 SOLID WASTE MANAGEMENT UNITS

A primary goal of the RFA is to identify and evaluate information regarding hazardous releases from solid waste management units (SWMUs) to air, surface water, ground water, and soils. The RFA is also intended to screen from further investigations those SWMUs which do not pose a threat to human health or the environment.

Under RCRA, Section 1004(28), the term "solid waste management" means the systematic administration of activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, and disposal of solid waste. A solid waste management unit is defined as any discernible waste management unit at a RCRA facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste. This definition may include manufacturing process areas, waste piles, recycling units, wastewater treatment units, and areas contaminated by "routine systematic and deliberate discharges".

Ciba-Geigy, in response to a request for information from EPA pursuant to Section 3007 of RCRA, identified the following 11 SWMUs at the Cranston facility (Figure 3) (Ciba-Geigy, 1985, 1985a):

SWMU 1 - Hazardous Waste Storage Area (Drums)

SWMU 2 - 6,000-gallon Hazardous Waste Storage Tank

SWMU 3 - 7,500-gallon, 90-day Accumulation Tank

SWMU 4 - Trash Compactor

SWMU 5 - Former Silt Pile

SWMU 6 - Zinc Oxide Pile

SWMU 7 - Chlorosulfonic Acid Spill Area

SWMU 8 - Potassium Ferrocyanide Spill Area

SWMU 9 - Wastewater Pipeline Break (January 12, 1982)

SWMU 10 - Wastewater Pipeline Break (September 7, 1983)

SWMU 11 - Building 11 Area

No additional SWMUs or areas of concern were identified during the PR or VSI. Unit and waste characteristics, as well as release information for each SWMU identified are discussed in this section of the report.

Other areas of concern at the facility are discussed in Section 5.0.

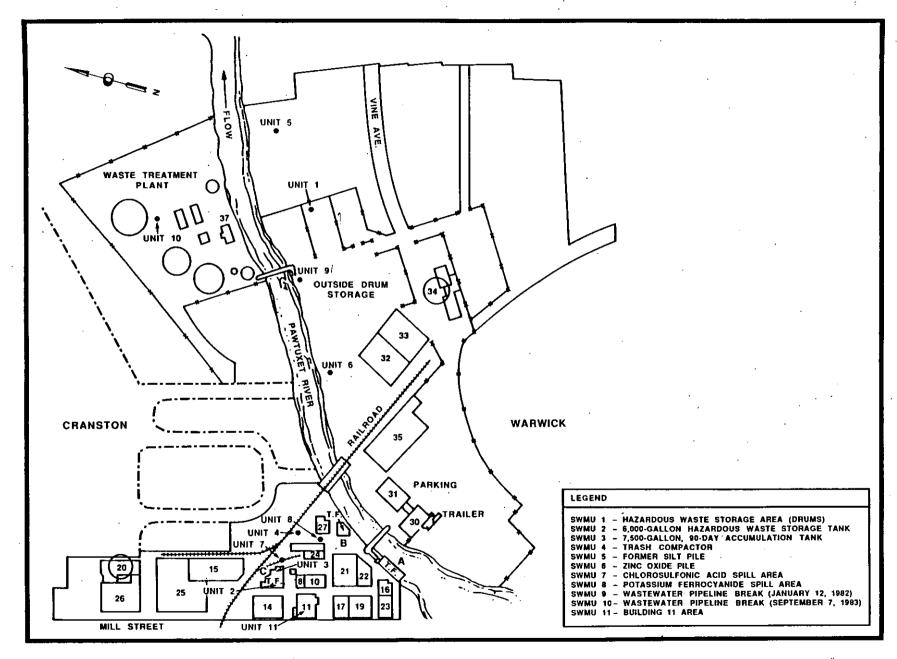


FIGURE 3. LOCATIONS OF SOLID WASTE MANAGEMENT UNITS, CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND (CIBA-GEIGY, 1985)

4.1 <u>SWMU 1 - Hazardous Waste Storage Area (Drums)</u>

SWMU 1 was located on the Warwick side of the Ciba-Geigy facility in the far northeast corner of the fenced property. The hazardous waste storage area was designed for a maximum capacity of 768 fifty-five gallon drums. It is an asphalt-lined area (42 feet wide by 58 feet long) enclosed by a 12 inch high, 8 inch wide concrete containment wall capable of holding more than 18,000 gallons. A solid metal gate with rubber gasketing was wedged into place at the entrance to the storage area during facility operations. The gate was lifted in and out of place by a forklift and permit access. The storage area is surrounded by a chain-link fence.

The area was operated from 1981 to 1986 solely for storage of hazardous waste (EPA, 1986). There were approximately 300 to 400 drums stored in the area at a given time (Ciba-Geigy, 1985a). Table 5 lists the wastes stored in the drums found during a RIDEM inspection of the facility on October 30, 1984. Prior to the construction and use of SWMU1, hazardous waste drums were stored in the production area near the former trash compactor (Ciba-Geigy, 1987).

Various wastes including flammable solids, oil-containing PCBs, corrosive solids, distillation sludge, chloroform, polychlorinated organics, flammable liquid and polyimides were stored in SWMU 1.

Ciba-Geigy was permitted under RCRA to store up to 50 different, listed hazardous wastes in the drum storage area (EPA, 1986). No information was obtained during the RFA which documented any releases from this area to the environment. On February 11, 1981, EPA and RIDEM personnel inspected the Ciba-Geigy facility and cited violations of the RCRA regulations regarding the hazardous waste drum storage area. In particular, Ciba-Geigy did not transfer in a timely manner hazardous wastes from approximately five leaking containers into containers that were in good condition. Enforcement action taken by EPA Region I

TABLE 5 WASTES STORED IN HAZARDOUS WASTE STORAGE AREA AT CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND

Waste in Drums	Number	of	Drums
Hydrocarbon, D001 Flammable solid, F003/U239 Ammonium thiosulfate Aromatic anhydride, D002, U002 Aromatic cyclic imide Organic solvents, process samples Triazole, solvent, F003 U169 U169, U012 Filter media, F005 Still sludge, F003 Solvent, wet absorbent, D001 Halogenated organic solids Aromatic amines		15 1 2 1 1 1 2 2 8 1 14 5 4 48	
TOTAL	:	105	

U.S. EPA Hazardous Waste Codes:

D001 - ignitable

D002 - corrosive

F003 - spent nonhalogenated solvents, xylene, acetone

F005 - spent nonhalogenated solvents, methanol, toluene U002 - acetone

U012 - aniline

Ul69 - nitrobenzene

U239 - dimethylbenzene (xylene)

resulted in the assessment of a civil penalty (EPA, 1981b). Leakage from the containers within the paved area of the drum storage area did not result in a significant threat of exposure.

Surface drainage from the concrete-paved area outside of this SWMU is via Outfall 004 to the Pawtuxet River. Accumulated rainfall or precipitation within the drum storage area was regularly pumped during plant operations to the facility's wastewater treatment plant.

At the time of the VSI, all drums had been removed from the area. The SWMU had been cleaned, and no evidence of any releases was apparent. The potential for exposure to any wastes previously managed in the unit is considered negligible by Versar. No samples were collected from this area during the SV. Versar believes that no further action under the RCRA corrective action program is warranted for this SWMU.

4.2 SWMU 2 - 6,000-Gallon Hazardous Waste Storage Tank

SWMU 2 was located in the tank farm adjacent to the railroad tracks and Building 14 on the Cranston side of the Ciba-Geigy facility. The 6,000-gallon carbon steel tank was used solely for the storage of hazardous waste from 1981 to 1986 (EPA, 1986). The vertical tank was 8 feet in diameter and 17 feet high. The tank was located in a concrete-diked enclosure which was 14 feet 6 inches wide by 19 feet long and 4 feet high and is capable of containing more than 8,000 gallons.

The tank was used to store a bulk waste solvent mixture comprised of varying amounts of toluene, monochlorobenzene, xylene, naphthalite, acetone, isopropanol, heptane, methanol, ethanol, and water. Permitted waste codes for the storage tank included ignitability, corrosivity, spent halogenated solvents, spent nonhalogenated solvents, alcohol, acetone, cresols, methyl ethyl ketone, and toluene (EPA, 1986). The 6,000-gallon hazardous waste storage tank was a RCRA-regulated hazardous waste management unit. The tank was normally filled within two feet of the top (over 5,000 gallons) before transferring the waste solvent out for shipment to an offsite disposal facility.

The contents from this tank were regularly pumped into 10,000-gallon railroad cars. Approximately 260,000 gallons of RCRA-regulated hazardous wastes were loaded per year (EPA, 1986). Railroad tank cars containing hazardous waste remained parked on the railroad spur within the facility for a week at a time. During transfer operations and storage of the waste solvent, no reported releases have been documented from the SMWU.

Drainage from the concrete-diked tank enclosure had previously flowed by way of underground piping to the facility's wastewater treatment plant. This drainage pathway was sealed off according to EPA hazardous waste storage requirements, and water subsequently had to be pumped out of the enclosed area (Ciba-Geigy, 1987).

The 6,000-gallon tank had been removed prior to the VSI. No evidence of releases was apparent in or around this unit at that time. Prior to the SV, all tanks had been removed from the main tank farm and the entire area demolished. During the SV, two subsurface soil samples (SS1, SS2) were collected downgradient of the former tank farm. Figure A in Attachment A shows the sampling locations. Versar believed subsurface infiltration was a likely pollutant migration pathway from this area. Samples were collected using a hand auger at depths ranging from 1 to 3 feet and were analyzed for volatile organics, semivolatile organics and pesticides/PCBs. Sample results are presented in Table 6.

The analysis revealed the low level presence of two volatile compounds, methylene chloride (50 ppb) and acetone (3 to 10 ppb). Toluene was also detected at 8 ppb in sample SS2 split with Ciba-Geigy. Soils in the sampling location were recently disturbed as a result of demolition activities which may partially be responsible for the absence of volatile constituents. Semivolatile organics, particularly polynuclear aromatic hydrocarbons (PAHs) such as fluoranthene, pyrene, chrysene, phenanthrene, and anthracene, were detected in sample SS1 but were not found in sample SS2 which is difficult to explain since these two sampling locations were no more than 15 to 20 feet apart. One reason

TABLE 6 SUBSURFACE SOIL SAMPLING RESULTS^a CIBA-GEIGY SAMPLING VISIT June 11, 1987

/2-	1000	***
Volatile Organics (ppb)	1000	
Methylene chloride	100B	50
Acetone	3J	. 10J
Toluene	ND(6)	. ND(7)
Tetrachloroethylene	ND(6)	ND(7)
Total xylenes	ND(6)	ND(7)
Chlorobenzene	ND(6)	ND(7)
Ethylbenzene	ND(6)	ND(7)
1,2-Dichloroethylene	ND(6)	ND(7)
Vinyl chloride	ND(11)	ND(15)
Benzene	ND(6)	ND(7)
2-Butanone	ND(11)	ND(15)
Semivolatile Organics (ppb)		·
2,4-Dimethylphenol	ND(740)	ND(490)
1,2-Dichlorobenzene	ND(740)	ND(490)
2-Chlorophenol	ND(740)	ND(490)
Phenol	ND(740)	ND(490)
Fluoranthene	1,500	ND(490)
Pyrene	1,300	ND(490)
Butylbenzylphthalate	ND(740)	ND(490)
Bis(2-ethylhexyl)phthalate	ND(740)	ND(490)
Chrysene	680J	ND(490)
Di-n-octyl phthalate	ND(740)	ND(490)
Benzo(b)fluoranthene	750	ND(490)
Benzo(k)fluoranthene	ND(740)	ND(490)
Benzo(a)pyrene	510J	ND(490)
Benzo(g,h,i)perylene	300J	ND(490)
Phenanthrene	1,100	ND(490)
Ideno(1,2,3-cd)pyrene	ND(740)	ND(490)
Dimethyl phthalate	1,400	ND(490)
Anthracene	300J	ND(490)
Benzo(a)anthracene	ND(740)	ND(490)
4-Chloroaniline Dibenzofuran	ND(740) ND(740)	ND(490) ND(490)
		- ()
PCBs (ppm) Aroclor - 1254	31	9.3
Aroclor - 1260	ND(0.899)	ND(1.176)

ND() - Compound not detected at level indicated ${\sf J}$ - Presence of compound detected, value estimated

B - Compound detected in the QC blank

^aResults are a compilation of the reported analytical data. HSL analytical parameters which do not appear in this table were not detected by the contract laboratory. Analysis were performed by ETC-Toxicon, Baton Rouge, Louisana on 6/17/87 (VOA), 7/15/87 (B/N/A), and 7/24/87 (pesticides/PCBs).

may be due to the fact that sample SS2 was collected from a slightly deeper subsurface location. In any event, the semivolatile levels encountered are consistent with levels found in an urban environment and do not appear to pose a significant threat, based on RIDEM findings (Section 6.1).

No pesticides were found in the two subsurface samples collected but elevated levels of polychlorinated biphenyls (PCBs) were encountered (Table 6). Versar believes that the presence of these compounds in the soil warrants further investigation which may potentially identify an extensive release. PCB wastes were known to be handled by Ciba-Geigy during plant operations, and are considered highly toxic environmental contaminants.

4.3 SWMU 3 - 7,500-Gallon, 90-Day Accumulation Tank

The 90-day accumulation tank was located in the same tank farm as the 6,000-gallon hazardous waste storage tank and was enclosed (along with three other tanks) by a dike 28 feet, 4 inches wide by 29 feet, 3 inches long and 4 feet high capable of containing approximately 25,000 gallons. The tank itself was constructed of stainless steel and stood vertically at a height of 17 feet and diameter of 8 feet, 6 inches.

The tank was used to store waste flammable liquids from 1985 to the present (EPA, 1986) for a period of less than 90 days at a time. The contents from this tank were regularly pumped into a 10,000-gallon railroad tank car together with wastes from SWMU 2. Approximately 260,000 gallons of non-RCRA-regulated hazardous wastes were loaded per year (EPA, 1986). During transfer operations and storage of the flammable liquids, no reported release have been documented from this SWMU. Potential releases from the main tank farm area were investigated during the SV as discussed in Section 4.2.

Initial evidence which indicated subsurface pollutant migration in the main tank farm area was obtained during the VSI. The headspace within a manhole accessing subsurface drainage directly south of the main tank farm revealed the potential presence of volatile organic compounds (60 ppm) as recorded by a portable photoionization unit. Upon venting of the manhole, levels dropped to 4 ppm accordingly.

4.4 SWMU 4 - Trash Compactor

The trash compactor was formerly located north of Building 27 adjacent to railroad tracks and sat on a concrete base, 21 feet wide by 36 feet long. The capacity of the trash compactor was 55 cubic yards. Cardboard, packaging material, washed fiber drums, filters, and waste paper were disposed of in this compactor from 1972 until the plant ceased operations in May 1986 (EPA, 1986).

Compacted materials were drummed and taken to a sanitary landfill or incinerated. The trash compactor area was concrete-lined and drainage from the compactor flowed to the facility's industrial waste treatment plant. No process wastes were reportedly put into the compactor (Ciba-Geigy, 1985a). There have been no documented releases to the environment from this area. Few remnants of this SWMU exist at its former location. The potential for exposure to any wastes previously managed in this unit is considered negligible by Versar. No samples were collected from the former trash compactor area during the SV. Versar believes that no further action is warranted for this SWMU.

4.5 <u>SWMU 5 - Former Silt Pile</u>

In 1971, a waste pile of silt dredged from the Pawtuxet River was landfilled on Warwick property belonging to Geigy Chemical Corporation. Approximately 6,630 cubic yards of this material was dredged by Ciba-Geigy from the river bottom near the facility's original coffer dam wastewater outfall and piled onsite (in the far northeast corner of the Warwick property adjacent to the river) for a number of years to dewater. During the period of December 13-23, 1976, this material was removed from the site. In 1977, as part of the flood plain restoration

required under the Wetlands Act, this area was brought back to grade and no further soil removal was done.

No analytical data regarding waste characteristics of the silt pile were found during the PR. The silt was dredged from the rive bottom because it was believed to contain various constituents associated with untreated process wastewater which had been discharged to the river through the facility's original wastewater outfall (Ciba-Geigy, 1987a). The use of this outfall, located just upstream of the plant's main vehicular bridge, was discontinued upon completion of the wastewater treatment plant. It is not known whether this dredging resulted in the complete removal of contaminants in the underlying river sediments.

It is known, however, that organic pollutants from wastewater discharge and urban runoff are found in river water and are also incorporated into the underlying sediments (Quinn et al., 1985). Specifically, with respect to the Pawtuxet River, environmentally stable contaminants with low water solubilities, such as compounds that were produced by Ciba-Geigy, tend to accumulate in estuarine sediments and have been found in Narragansett Bay sediments (Jungclaus et al., 1978; Lopez-Avila & Hiles, 1980). Although these studies were performed after the dredging of the river, they indicate that the silt pile probably contained hazardous constituents and may have contributed to a release from the facility.

During the VSI, the location of the former silt pile was examined. Most of the area was overgrown with vegetation (mostly grasses). Soils within the SWMU area were disturbed just below the surface and monitored with a photoionization unit. Readings were 1 to 6 ppm above background levels, which indicated the potential presence of residual contamination. Migration pathways from this unit include surface runoff and subsurface infiltration.

One composite surface soil sample (SS3) (formed from 4 discrete samples) and one ground-water sample (GW8) were collected from the former silt pile area during the SV. Figure A in Attachment A shows the sampling locations. Analysis of the soil sample revealed the elevated presence of antimony (137 ppm), arsenic (31 ppm), barium (622 ppm), cadmium (14 ppm), chromium (407 ppm), manganese (971 ppm), mercury (38 ppm), zinc (11,000 ppm), and PCBs (3.2 ppm) relative to background concentrations (Table 7). Additionally, analysis of the split soil sample by Ciba-Geigy revealed the presence of toluene (7 ppb), various PAH's typically associated with an urban environment, heptachlor epoxide (1.3 ppm), PCBs (59 ppm), chromium (97 ppm), and zinc (2,830 ppm).

These analyses indicate that a potential for exposure exists primarily to contaminants in the surface soils due to heavy metal and PCB content. Access to this SWMU area is unrestricted. The potential of exposure to contaminants in the subsurface cannot be determined from the current information available. Versar believes that this area warrants further investigation to define the extent of contamination and determine the potential threat to human health or the environment based on the data collected.

Analysis of EPA's ground-water sample showed lead, manganese, and zinc present at 0.00518 ppm, 0.018 ppm and 5.36 ppm, respectively. Organic parameters detected were typically at levels below specified method detection limits and do not appear to be a significant concern. These results may be due to the apparent upgradient location of the ground-water pipe from which the sample was collected. Ground-water sample results are discussed in Section 6.3.

4.6 SWMU 6 - Zinc Oxide Pile

In the late 1960s, a pile of soil containing zinc oxide residues from a broken rail car was placed between the end of the pavement and a guardrail which borders the Pawtuxet River north of the former outside drum storage area. A total volume of 25 cubic yards of material was piled on the ground for a couple of months before being transferred to

TABLE 7 SILT PILE SOIL SAMPLING RESULTS^a Ciba-GEIGY SAMPLING VISIT June 11, 1987

Sample S						
Antimony 137 ND 19 ND Arsenic 31 ND 3.5 ND Barium 622 NA [40] NA Beryllium ND(2.2) 0.6 ND(0.49) 0. Cadmium 14 ND 1.2 ND Chromium 407 97 14 15 Iron 64,500 NA 10,400 NA Lead 5.2 34J ND(0.40) 45J Magnesium 5,760 NA 1,490 NA Manganese 971 NA 173 ND Mercury 38 0.83 2.7 ND Nickel ND(30) ND [8.3] ND Selenium [1.5] ND [0.25] ND Silver ND(8.0) ND ND(1.8) ND Vanadium 101 NA 32 ND Volatile Organics (ppb) ND ND(5) ND <th></th> <th>Sample</th> <th>Split</th> <th>Background</th> <th>Ciba-Geigy Background Sample</th>		Sample	Split	Background	Ciba-Geigy Background Sample	
Arsenic 31 ND 3.5 ND Barium 622 NA [40] NA Beryllium ND(2.2) 0.6 ND(0.49) 0. Cadmium 14 ND 1.2 ND Chromium 407 97 14 15 Iron 64,500 NA 10,400 NA Lead 5.2 34J ND(0.40) 45J Magnesium 5,760 NA 1,490 NA Manganese 971 NA 173 ND Mercury 38 0.83 2.7 ND Nickel ND(30) ND [8.3] ND Selenium [1.5] ND [0.25] ND Silver ND(8.0) ND ND(1.8) ND Vanadium 101 NA 32 ND Vanadium 101 ND ND(5) ND ND(5) ND ND(5) ND ND(5) ND ND(6) ND	Metals (ppm)					
Barium 622 NA [40] NA Beryllium ND(2.2) 0.6 ND(0.49) 0. Cadmium 14 ND 1.2 ND Chromium 407 97 14 15 Iron 64,500 NA 10,400 NA Lead 5.2 34J ND(0.40) 45J Magnesium 5,760 NA 1,490 NA Manganese 971 NA 173 ND Mercury 38 0.83 2.7 ND Nickel ND(30) ND [8.3] ND Selenium [1.5] ND [0.25] ND Silver ND(8.0) ND ND(1.8) ND Vanadium 101 NA 32 ND Zinc 11,000 2,830J 200 217J Volatile Organics (ppb) 7 ND(5) ND Toluene ND(6) ND ND(5)						
Beryllium ND(2.2) 0.6 ND(0.49) 0. Cadmium 14 ND 1.2 ND Chromium 407 97 14 15 Iron 64,500 NA 10,400 NA Lead 5.2 34J ND(0.40) 45J Magnesium 5,760 NA 1,490 NA Manganese 971 NA 1,73 ND Mercury 38 0.83 2.7 ND Nickel ND(30) ND [8.3] ND Selenium [1.5] ND [0.25] ND Silver ND(8.0) ND ND(1.8) ND Vanadium 101 NA 32 ND Zinc 11,000 2,830J 200 217J Volatile Organics (ppb) ND(5) ND ND(5) ND Total xylenes ND(6) ND ND(5) ND Total xylenes ND(6) <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>						
Cadmium 14 ND 1.2 ND Chromium 407 97 14 15 Iron 64,500 NA 10,400 NA Lead 5.2 34J ND(0.40) 45J Magnesium 5,760 NA 1,490 NA Manganese 971 NA 173 ND Mercury 38 0.83 2.7 ND Nickel ND(30) ND [8.3] ND Selenium [1.5] ND [0.25] ND Silver ND(8.0) ND ND(1.8) ND Vanadium 101 NA 32 ND Value ND(8.0) ND(1.8) ND ND(5) <td></td> <td></td> <td></td> <td></td> <td></td>						
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(CONTINUED)

TABLE 7 SILT PILE SOIL SAMPLING RESULTS^a Ciba-GEIGY SAMPLING VISIT June 11, 1987 (Continued)

•	EPA Sample SS3	Ciba-Geigy Split Sample	EPA Background Sample BG1	Ciba-Geigy Background Sample
Semivolatile Organics	(ppb) (conti	nued)	•	
Benzo(a)pyrene	ND(9,500)	800	2,100J	1,900
Butylbenzylphthalate	ND(9,500)	150J	22,000	5,800J
PCBs (ppm)				
Aroclor - 1254	3.2	ND	ND(0.86)	ND
Aroclor - 1260	ND(0.92)	59	ND(0.001)	ND
Pesticides (ppm)				
Heptachlor epoxide	ND(0.046	1.3	ND(0.043)	0.12
Delta-BHC	ND(0.046) - ND	ND(0.043)	0.12

NA - Not analyzed.

ND() - Compound not detected at level indicated. Detection limits were not available for Ciba-Geigy analyses.

J - Presence of compound detected, value estimated.

^{[] -} Result is a value greater than or equal to instrument detection limit but less than contract required detection limit.

^aEPA results are a compilation of the reported analytical data. HSL analytical parameters which do not appear in this table were not detected by the respective contract laboratories. Metals analyses were performed by Cambridge Analytical Associates, Boston, Massachusetts on 7/20/87. Organic analyses were performed by ETC-Toxicon, Baton Rouge, Louisana on 6/17/87 (VOA), 7/16/87 (B/N/A), and 7/25/87 (pesticides/PCBs).

another rail car. A major part of the zinc oxide pile still exists onsite. The pile is approximately 7 feet wide by 50 feet long, and 2 feet high, and consists of soil and lumps of zinc oxide. Zinc oxide is not a RCRA-regulated waste.

Surface runoff from the area discharges to the river by way of Outfall 003. Releases from this unit and the potential for exposure are not major concerns because of the innocuous nature of the pile material. No samples were collected from the SVMU during the SV. Versar believes that no further action is warranted for this unit.

4.7 SWMU 7 - Chlorosulfonic Acid Spill Area

A 500 gallon chlorosulfonic acid spill from a trailer truck occurred in 1961 and is estimated to have covered an area 10 feet by 20 feet by 1 foot deep within the area bordered by the railroad spur adjacent to the former main tank farm. Chlorosulfonic acid may be described as a hazardous waste under RCRA due to its corrosive characteristic (40 CFR 261.22). The area covered by the spill was reportedly neutralized and subsequently excavated for the tank farm foundations (Ciba-Geigy, 1985a). It is unknown what, if anything, was used to neutralize the area or how much soil was removed. Evidence of release has not been documented since the area was previously covered by the tank farm. Similarly contaminant migration and exposure potentials have not been determined.

Since no analytical data is available regarding this release which has been identified by Ciba-Geigy, Versar believes it is the facility's responsibility to determine the status and extent of contamination within this SWMU as part of a further investigation. This investigation should include the general collection of surface soil, subsurface soil, and ground-water samples in the area surrounding the former main tank farm.

4.8 SWMU 8 - Potassium Ferrocyanide Spill Area

Blue-stained soil, resulting from a spill of an unknown quantity of potassium ferrocyanide (Prussian blue) which occurred around 1956, was

excavated for tank farm foundations in 1961 (Ciba-Geigy, 1985a). Information regarding the source of the spill was not found during the PRE. Potassium ferrocyanide may be described as a hazardous waste under RCRA due to its reactivity characteristic (40 CFR 261.23). At least 306 cubic yards of soil were removed and new fill compacted in place for the storage tank foundations. During the installation of the plant wastewater piping system in the 1960s, another quantity of blue-stained soil was excavated from an area between Building 10 and 24 (Ciba-Geigy, 1985).

At the time of the VSI, facility representatives indicated that the Prussian blue was only found in one area between Building 27 and former Building 24 (Ciba-Geigy, 1987). Evidence of release has not been documented, since this area has been paved. Similarly, contaminant migration and exposure potential have not been documented. Since no analytical data is available regarding this release which has been identified by Ciba-Geigy, Versar believes it is the facility's responsibility to determine the exact location of the SWMU as well as the status and extent of potential contamination as part of a further investigation.

4.9 SWMU 9 - Wastewater Pipeline Break (January 12, 1982)

SWMU 9 was actually part of the Ciba-Geigy wastewater treatment process. On January 12, 1982, a break in the main raw waste transfer line on the southerly side (Warwick property) of the pipe bridge leading to the wastewater treatment plant resulted in the discharge of concentrated process wastewater to the Pawtuxet River. According to Ciba-Geigy, measures were taken immediately to reduce the flow in the line and initiate repairs. The approximate volume discharged, over a four-hour period, was 24,000 gallons (Ciba-Geigy, 1982b). The spill to the soil surrounding the pipe break was diverted to the facility's 004 outfall primarily used for the discharge of raw material storage drum cooling spray in the summer as well as storm water runoff (Section 5.2).

The spill resulted in a period of noncompliance with the facility's National Pollutant Discharge Elimination System (NPDES) permit due to the direct discharge of process wastewater to the river. Analytical data regarding the concentrations of contaminants in the raw waste being discharged was not found during the PR. The pH of the river upstream and downstream of the discharge was checked by Ciba-Geigy and both readings were 6. The pH of the discharge itself varied between 4 and 12 during this period (Ciba-Geigy, 1982b). Influent to the wastewater treatment plant typically would contain various amounts of halogenated and nonhalogenated solvents, volatile organic compounds, and heavy metals (i.e., materials used in the chemical manufacturing processes).

During the VSI, the pipeline break area was examined. The entire pipeline had been removed, but the guardrail that supported the pipeline remained in place, revealing the former layout of the wastewater line. The area surrounding the point of the pipeline break revealed no evidence of past release. Apparently, all of the wastewater discharged during the break flowed to the river.

No samples were collected from this unit during the SV. No information regarding any residual contamination in the area exists. Since no analytical data is available regarding this release which has been identified by Ciba-Geigy, Versar believes it is the facility's responsibility to determine the status and extent of contamination within the SWMU as part of a further investigation. This investigation should include the collection of durface and subsurface soil samples in the general area surrounding the former pipeline break. Potential contaminant migration is via surface runoff to the river. Potential exposure pathways include contact with contaminated soils or the river.

4.10 SWMU 10 - Wastewater Pipeline Break (September 7, 1983)

SWMU 10, which was also part of the Ciba-Geigy wastewater treatment process, was identified as a result of a rupture in an underground wastewater line feeding one of three equalization tanks at the wastewater

treatment plant. Neutralized pretreated wastewater from the equalization tanks passed through the plant's clarifier before being discharged to the Cranston POTW. The ruptured pipeline was located approximately 5 feet below the ground surface. During a period which lasted about 1.5 hours, beginning around 8:00 a.m. on September 7, 1983, approximately 50,000 gallons of pretreated wastewater was lost to the Pawtuxet River. Cavitation of the soils around the ruptured line allowed the discharge to reach the ground surface, from where it flowed east following natural drainage before being diverted to the facility's 001 outfall. Outfall 001 was a duffysion type outfall located on the bottom of the river used primarily for the discharge of pretreated effluent from the treatment plant (Ciba-Geigy, 1983e).

Ciba-Geigy reported that the pH of the wastewater was 8.5 and contained 75 ppm acetone (31 pounds), 108 ppm isopropyl alcohol (45 pounds), 4 ppm xylene (1.7 pounds), 17 ppm toluene (7 pounds), 0.6 ppm zinc (6.25 pounds), and 0.3 ppm nitrobenzene (6.125 pounds) (Ciba-Geigy, 1983e). Surface water samples taken from the Pawtuxet River by the RIDEM on the day of the spill revealed the presence of toluene (2 ppm) downstream and (1.1 ppm) upstream (RIDEM, 1983a). According to Ciba-Geigy, the discharge was stopped immediately upon identification of the pipe break. Impact from the spill primarily resulted in contamination of the Pawtuxet River and the soils at the site of the pipe rupture.

During the VSI, the pipeline break area was examined. All structures and facilities at the wastewater treatment plant had been removed. Soils had been excavated, backfilled, and graded. The area surrounding the point of the pipeline rupture and the drainage pathway from the SWMU to the river revealed no evidence of past release.

No samples were collected from this unit during the SV. No information regarding any residual contamination in the area of the pipeline break exists. Since no analytical data is available regarding this release which has been identified by Ciba-Geigy, Versar believes it

is the facility's responsibility to determine the status and extent of contamination within this SWMU as part of a further investigation. This investigation should include the collection of subsurface soil and ground-water samples in the general area of the pipeline break and downgradient of the SWMU area. Contaminant migration is potentially via surface runoff to the river or through the subsurface to the ground water. Potential exposure pathways include contact with the river or contaminated soils.

4.11 SWMU 11 - Building 11 Area

SWMU 11 is the site of the former production Building 11 which was razed in October 1983. Analysis of ground-water samples in the vicinity of the Building 11 sump at the time of demolition indicated a low level presence (<1 ppm) of toluene. Documentation of ground-water tests performed at that time, however, cannot be produced by Ciba-Geigy. The calculated loss, by Ciba-Geigy, of toluene is between 9 and 90 pounds over a two-year period (Ciba-Geigy, 1985a). The sump was located underground, had a capacity of 300 gallons, and was constructed of concrete. The sump operated as an overflow wier and contained a constant amount of water, which was normally pumped to the treatment plant. The area of the former Building 11 is now paved.

Toluene was a major organic solvent used in Ciba-Geigy's chemical manufacturing process with well over 1,000,000 pounds consumed annually. The presence of toluene in the ground water indicates a release to the environment which may not be specific to this one area of the site. Toluene is listed as a hazardous waste under RCRA, F005 (40 CFR 261.31), U220 (40 CFR 261.33) and may be considered hazardous due to its ignitability characteristic, D001 (40 CFR 261.21).

Ground-water samples were collected at Ciba-Geigy during the SV.

The majority of these samples were obtained from the former production area including areas adjacent to and downgradient of former Building 11.

Ground-water sampling results are discussed in detail in Section 6.3. In

general the results indicate that the ground water beneath Ciba-Geigy on the Cranston side of the facility contains various volatile constituents, including toluene, which warrant further investigation through a hydrogeologic study and additional sample collection to determine the full extent of contamination.

5.0 OTHER AREAS OF CONCERN

There are several other areas of concern at the Ciba-Geigy Cranston plant which were not identified as SWMUs in the preceding section, but which may be associated with or contribute to releases from the facility to the surrounding environment. These areas will be discussed separately in this section.

5.1 Wastewater Treatment Plant

The biological wastewater treatment plant at the Ciba-Geigy facility, completed in 1972, was designed to control the large volume of process wastewater generated during manufacturing operations and minimize the environmental impact of water discharges to the Pawtuxet River. Ciba-Geigy was first issued a NPDES permit (RI 0001171) in 1974 and operated the wastewater treatment plant under U.S. EPA Clean Water Act limitations from November 1975 to July 1983.

One stipulation in the permit was to terminate the direct discharge of treated process wastewaters by the tie-in of the Ciba-Geigy treatment system with the city of Cranston's expanded wastewater treatment plant (POTW) by July 1983. After tie-in to the city system, plant waste was pretreated, analyzed, and the discharge to an adjacent city pumping station controlled. Ciba-Geigy shut down its trickling filter and final biological treatment occurred at the Cranston POTW. Prior to the tie-in, a number of releases from the wastewater treatment plant in violation of the NPDES permit have been documented. EPA did not refer these permit violations for enforcement action because of Ciba-Geigy's planned tie-in to the Cranston POTW to eliminate the discharge of pretreated wastewaters to the Pawtuxet River (EPA, 1983).

On February 2 and 3, 1983, Ciba-Geigy discharged 157 pounds and 50 pounds, respectively, of zinc although the permitted maximum was 12.5 pounds per day. The high level of zinc resulted from start up problems with one of the wastewater plant trickling filters (Ciba-Geigy, 1983).

On February 15 and 16, 1983, Ciba-Geigy discharged 18,550 pounds and 22,500 pounds, respectively, of biological oxygen demand (BOD) although the permitted maximum was 16,000 pounds per day. These discharges were attributed to losses of isopropyl alcohol and glycol to the wastewater treatment system (Ciba-Geigy, 1983a).

OneMarch 1, 1983, Ciba-Geigy discharged 100 pounds of phenol although the permitted maximum was 62.5 pounds. This discharge was speculated as a loss of phenol to the wastewater treatment system during dismantling of a production building (Ciba-Geigy, 1983a).

On April 18 and 19, 1983, 260,000 gallons of wastewater with a pH of 4.5 were discharged as a result of a failure to check the pH of an equalization tank prior to discharge. NPDES permit requires that the pH of its discharge be not less than 6.0 nor greater than 0.5 units above the pH of the intake water (Ciba-Geigy, 1983b).

During March and April 1983, the presence of chloroform was detected in the effluent outfall 001. In March, 0.77 pounds/day and in April, 1.5 pounds/day were being discharged. The NPDES permit did not authorize chloroform to be discharged from the facility (RIDEM, 1983).

According to RFA guidance supplied by U.S. EPA, the definition of a SWMU includes wastewater treatment units. Operation and maintenance problems which led to the above documented releases as well as the large volume of waste material that flowed through the wastewater treatment plant at Ciba-Geigy indicate that this area should be a principal concern regarding the facility assessment under the corrective action program. The current status of the wastewater treatment plant and the impact to soils surrounding the plant as a result of releases requires further investigation.

There reportedly was an area to the right of the wastewater treatment plant, the former site of the trickling towers, where there was no vegetation (EPA, 1986a). The trickling towers were in use from 1970-1983 and there were occasional sump overflows. Influent to the

trickling filter where biological degradation occurred was sampled by EPA in 1983 (EPA, 1983a). Table 8 reveals some of the compounds present in the influent. Releases to the soil surrounding the towers would potentially contain these compounds.

5.2 Pawtuxet River

The Pawtuxet River is probably the most sensitive environmental area with respect to releases from the Ciba-Geigy facility. Discharges to the river occurred primarily under NPDES Permit No. RI 0001171 from four outfalls, two located on the northern bank of the river and two on the southern bank (Figure 4) as indicated in Table 9.

Figure 5 is a schematic of water flow which leads to these outfalls at the Ciba-Geigy facility. The majority of flow to the Pawtuxet River was via effluent outfall 001 from the wastewater treatment plant. Two other discharge points for certain emergency discharge are known to have been covered under the original NPDES application but were eliminated from the current permit since these discharge points were not in use (Ciba-Geigy, 1973). The exact locations of these other discharge points were not determined during the RFA.

A number of additional incidents have been documented which resulted in routine or uncontrolled releases to the Pawtuxet River. On May 22, 1974, during an investigation of an oil spill at the Atlantic Tubing and Rubber Co., a discharge from an 18-inch storm drain, located on Ciba-Geigy property, about 10 feet east of the property fence was noted (RIDEM, 1974). The discharge was flowing at less than 1 gpm and was leaving a light film on the river. Subsequent analysis of the discharge revealed the presence of acetone, isopropanol, ethanol, and toluene.

When questioned about the discharge, Ciba-Geigy could not determine the source since this drainage system was no longer in use (RIDEM, 1974).

From August 28, 1975, to September 2, 1975, discharge of cooling tower water at Outfall 002 averaged approximately 1.4 million gallons per

TABLE 8

PARTIAL RESULTS OF SAMPLING INFLUENT TO TRICKLING FILTER
AT THE CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
(EPA, 1983a)

Sample Concentration (mg/l)

•	1	
Purge and Trap	<u># 72588</u> a	<u># 72589</u> b
Acetone	10.5	23.5
Isopropanol	66.5	65.5
2-chloropropane	.74J	.93J
Chloroform	.16	.17
Isopropyl ether	.30	.34
Methylcyclohexane	.18	.17
Toluene	**	19
Ethyl benzene	.60	.64
Xylene isomers	4	4.3
Acid Extraction	<u>#_72</u>	
	<u>Column A</u>	<u>Column B</u> C
2-nitrophenol	.05	.19
Phenol	.13	.53
2,4-dimethylphenol	.007	.028
<2,4-dichlorophenol	.004	.016
p-(1,1-dimethylpropyl)phenol	· 2.1J	8.65J
2,4-di-tert-amyl phenol	3.5J	14.5J
p-cumyl phenol	1.9J	7.9J
<pre>2-(hydroxy-ar-pentylphenyl)-</pre>		
ar-pentylbenzotriazole	1.15J	4.8J
Base Neutrals	# 72588	
Methylchlorobenzene	.057J	
Alpha-methylstyrene	.031J	
Aniline	.39J	
Nitrobenzene	.325	
Naphthalene	.03	
1,2-benzenediamine	.20J	
Acenaphthylene	.003J	
Bis-(2-ethylhexyl)-phthalate	1.7	
		

J = No standards available. Estimate value.

^{** =} Saturation.

a = Sample 72588 received for analyses on April 4, 1983.

b = Same as 72588, different preservative

c = In Column B the concentrations are based on an efficiency of 24 percent for d5-phenol.

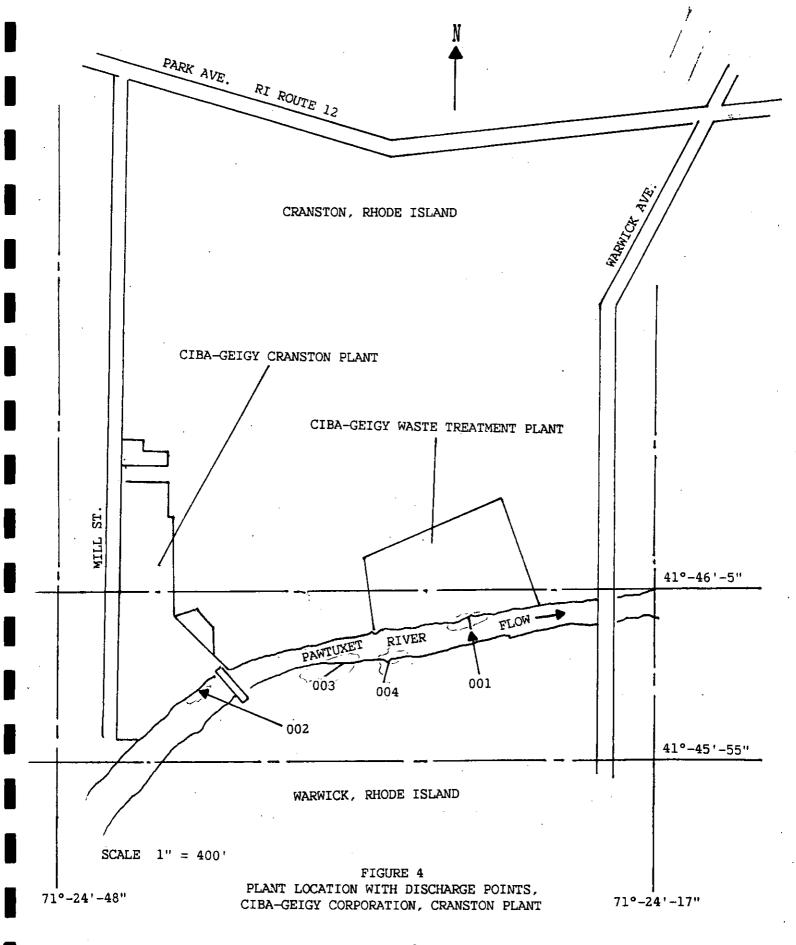
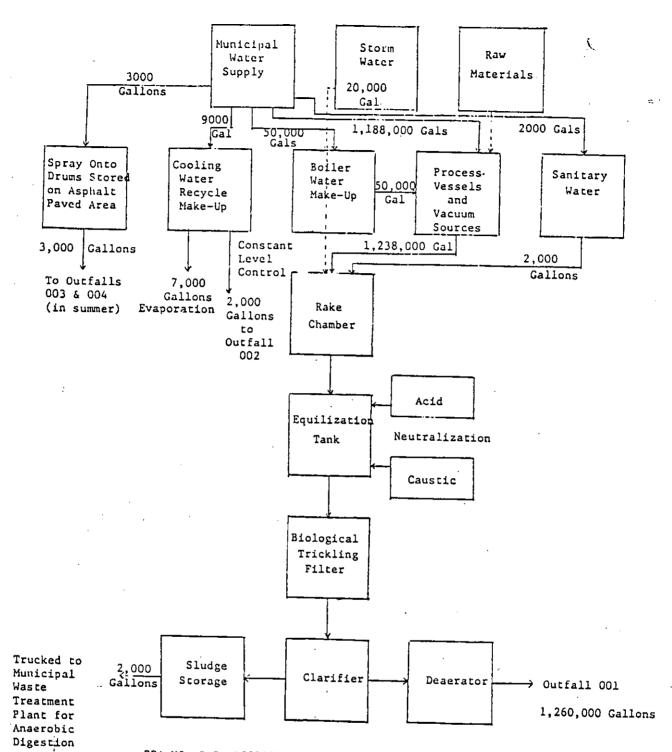


TABLE 9
PAWTUXET RIVER OUTFALL LOCATIONS,
CIBA-GEIGY CORPORATION, CRANSTON, RHODE ISLAND
(EPA, 1983b)

Outfall No.	Operation	Location
001	Process water including boiler feed makeup, storm water and sanitary water	41° 46' 00"N 71° 24' 25"W
002	Cooling water overflow, direct cooling water	41° 45' 77"N 71° 24' 42"W
003 and 004	Water spray for cooling drums in summer	41° 45' 84"N 71° 24' 33"W



EPA NO. R.I. D001194323

FIGURE 5
SCHEMATIC OF WATER FLOW, CIBA-GEIGY CORPORATION,
CRANSTON, PROVIDENCE COUNTY, RHODE ISLAND
(Ciba-Geigy, 1981a)

day in excess of the maximum flow limitation of 50,000 gallons per day allowed for this discharge point. The excess flow was required to maintain cooling water temperature while the forced air fan in the cooling tower was repaired (Ciba-Geigy, 1975).

On January 23, 1980, approximately 500 gallons of raw waste water trickled into the Pawtuxet River from the trash rake chamber, in violation of the NPDES permit. The effluent trash rake failed, allowing debris to build up causing the water level in the chamber to rise enough to trickle into the river (Ciba-Geigy, 1980).

On June 17, 1980, a chemical spill to the Pawtuxet River occurred when a seal ruptured on a reactor vessel, causing its contents to be discharged up a stack vent. From the stack vent, the chemical was sprayed onto a yard area where it drained through a channel to the river. The incident involved several hundred pounds of a plastic additive, consisting of organics, solvents, and zinc with the primary constituent being naphthalite (RIDEM, 1980).

On August 3, 1980, an estimated 25 gallons of "special naphthalite" was lost to the river as a result of a recent interconnection of two chemical transfer lines and the failure of an operator to properly close a series of valves. Alcohol was subsequently forced into a storage tank containing special naphthalite causing the contents to be discharged through the tank's vent and upon the roof of Building 21. From there the chemical flowed to roof drains which discharge directly to the Pawtuxet River. Spilled product remaining on the roof was drummed and disposed of offsite (RIDEM, 1980a).

In November 1981, U.S. EPA Region I granted Ciba-Geigy a temporary forbearance of enforcement of the maximum discharge requirement contained in the NPDES permit for outfall 002 (noncontact cooling water) during the month of December in order for the facility to make repairs to the cooling tower (U.S. EPA, 1981). This bypass of the cooling tower by Ciba-Geigy exceeded the one month time limitation stipulated in the

forbearance. Results from samples collected by RIDEM indicated that the temporary discharge did not have an adverse effect on the water quality of the river (RIDEM, 1982).

During the period of June 7-8, 1982, water being pumped from the building sumps, as a result of a flood in the Pawtuxet River basin, filled the wastewater treatment plant's equalization tank, diluting wastewater in the system. An overflow of this diluted wastewater occurred on June 8, causing a total of 360,000 gallons of wastewater of pH 9 to be released to the flooded river (Ciba-Geigy, 1982).

On April 13, 1983, raw wastewater of pH 10.5 was discharged to the Pawtuxet River over a 2.5 hour period. An estimated 11,500 gallons was lost as a result of damage to the raw waste pipe during construction at the wastewater treatment plant in preparation for the tie-in with the Cranston POTW (Ciba-Geigy, 1983c). This wastewater represented typical discharge and did not result in a permit violation.

5.3 Tank Farms

Ciba-Geigy maintained three aboveground tank farms at the Cranston facility; tank farm over the river (Tank Farm A), Building 21 tank farm (Tank Farm B), and the main aboveground tank farm (Tank Farm C) and 10,000-gallon tank along Mill Street (Figure 2). Except for Tank Farm C, which contains SWMU 2 and SWMU 3 (hazardous waste), all tanks were used for bulk solvent or raw material storage. The total number and capacity of the tanks utilized was not determined during the RFA, but at least 40 tanks were known to contain the following materials:

- Sulfuric Acid
- Hydrochloric Acid
- Nitric Acid
- Caustics
- Para-cresol
- Methyl acrylate
- Phenol
- Styrenated Phenol
- Methanol
- Isopropanol

- Acetone
- Toluene
- Mineral Spirits
- Monochlorobenzene

Clean up and demolition at the Ciba-Geigy facility has included Tank Farms A, B, and C. All material stored in the tanks transferred from the tanks which were subsequently cleaned and removed.

During facility operations, the tank farms were designed to drain to the wastewater treatment plant. Since none of the aboveground tanks contained fuel oil, Ciba-Geigy was not required to have a formal Spill Prevention Control and Countermeasure (SPCC) Plan pursuant to 40 CFR 112 of the Clean Water Act (Ciba-Geigy, 1985b). Containment and diversion of spilled material from the tank farms was documented during the following incident involving para-cresol.

On May 25, 1983, a spillage of the raw material, para-cresol, occurred from the 10,000-gallon outdoor storage tank at the main tank farm. The entire spill (approximately 72,000 pounds or 8,000 gallons) was completely contained in two equalization tanks at the facility's wastewater treatment plant (Ciba-Geigy, 1983d). The flow to the wastewater equalization tanks, however, was not controlled and resulted in the contamination of about 1,750,000 gallons of other plant wastewater. Resulting concentrations of para-cresol were estimated to be 0.66 percent in one tank containing about 1,250,000 gallons, and 0.11 percent in the other tank containing about 500,000 gallons.

Ciba-Geigy was required to bring in activated carbon absorption units on a temporary basis to provide the additional treatment necessary to maintain compliance with the state discharge limitations for para-cresol (EPA, 1983). Para-cresol was used by Ciba-Geigy in the manufacture of tinuvin-P, an ultraviolet stabilizer of plastics and normally found in Ciba-Geigy's wastewater in low quantities, but was not regulated by the company's NPDES permit. The discharge limit, approved by RIDEM and based on Toxic Substances Control Act (TSCA) regulations, was set at 1,000 pounds of para-cresol per day (Cranston, 1983).

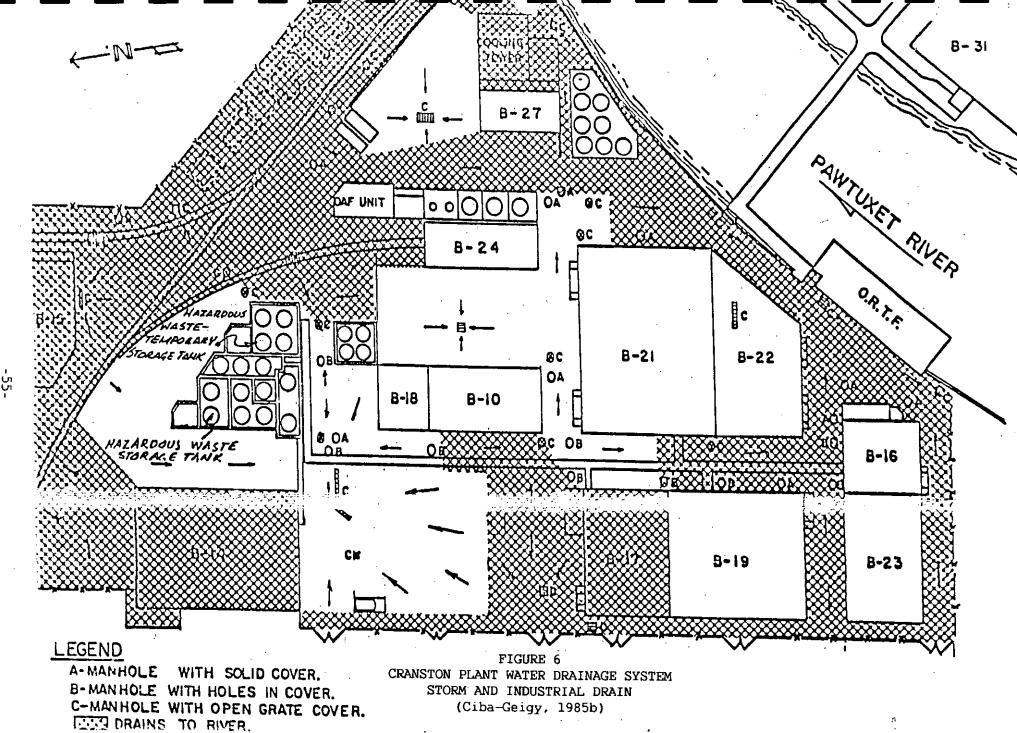
In order to meet the discharge limit, Ciba-Geigy had to reduce flow to the wastewater plant while treatment was taking place, requiring Ciba-Geigy to shut down production for five days. Para-cresol is a listed hazardous waste, UO52, under RCRA (40 CFR 261.33) and is considered a toxic material. Its impact on the environment was not determined upon release from the treatment plant. The incidence of other spills from the tank farms, and their impact on the environment was not found during the PR.

In addition to the aboveground tank farms, Ciba-Geigy maintained an underground raw material storage tank farm, underground fuel oil and gasoline tanks, a quarantine tank farm, and distillation column feed storage tanks. The cleaning and removal of all these tanks is included in Ciba-Geigy's plan for closing the site.

During the VSI, the former location of Ciba-Geigy's underground bulk solvent and raw material storage tanks, northwest of the production area adjacent to residential property in Cranston, was examined. Eight 10,000-gallon storage tanks previously used to store toluene, acetone, isopropyl alcohol, and other solvents had been removed from this area. Soils around the tanks had been excavated, and the entire area was backfilled with a sandy material. The location of one underground gasoline tank and two underground fuel oil tanks was also found during the VSI. These tanks, which have remained in place, are situated near the former Building 11 area. Releases from these tanks have not been identified during the RFA, although ground water beneath the former production area has been shown to be contaminated (Section 6.3).

5.4 Underground Pipelines, Sumps, and Sewer Lines

Throughout the Ciba-Geigy facility there are a series of underground pipelines, sumps, and sewer lines interconnected and configured to carry various materials to different locations within the plant. The majority of underground drainage system pipelines carry storm and industrial water to the wastewater treatment plant (Figure 6).



DRAINS TO EFFLUENT TREATMENT PLANT

A preliminary assessment (PA) of the facility conducted by EPA Field Investigation Team (FIT) under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) reported that a drainage system which was formerly used to discharge wastewater into the Pawtuxet River exists beneath the Ciba-Geigy facility. Although this system is no longer in use, it is heavily contaminated with oil (NUS, 1983). A site investigation (SI) was scheduled to be performed in conjunction with the PA to determine if significant amounts of chemicals were migrating into the environment surrounding Ciba-Geigy. The SI was cancelled due to low EPA priority and lack of a hazard ranking system (HRS) score used to determine if further action is needed at a site.

In addition to drainage system pipelines, other underground lines at Ciba-Geigy include underground tank farm lines, cooling tower water lines, industrial raw waste and sample lines, raw waste sumps, fuel and gasoline pipelines, caustic system lines, and sulfuric acid system lines. All underground piping systems are scheduled to be cleaned but will remain in place after the plant has closed.

Information from Ciba-Geigy was received by EPA Region I regarding the location of underground pipelines, sumps, and sewer lines throughout the facility. No information was available regarding releases from these underground lines. Versar believes, however, that contaminants present in the ground water beneath the former production area may potentially have originated from underground sources.

5.5 Process Buildings

All process buildings and process systems within the buildings were scheduled to be cleaned before dismantling or demolition began. Residual contamination remaining in these buildings after manufacturing operations ceased may have included, but is not limited to, asbestos-containing insulation, zinc sludge, and PCB-contaminated surfaces.

Within process buildings, various pipe systems and equipment, wall panels, and roofs were identified as places with insulation containing asbestos. The removal and disposal of asbestos-containing material was required by Ciba-Geigy before demolition of any building began. Buildings and/or structures where asbestos may have been present included Building 16/23, Building 17/19, Building 21/22, Building 24, Building 10/18 (Steam Plant/Electrical), Building 14 (office), and the cooling tower. Asbestos was also contained in insulation of tanks within buildings and in outside insulation of storage tanks in the main tank farm.

Areas of residual zinc contamination, resulting from the zinc process utilized by Ciba-Geigy to produce plastic additives, include equipment, process systems, and structures in Building 24, Building 21, and Building 19. Production utilizing the zinc process was carried out in Building 19 and Building 21 and involved the only continuous chemical manufacturing process run at the plant. Zinc was handled in such a large volume that it was recovered in a zinc recovery system in Building 24 and sent to another facility for recycling. The use of zinc in process systems also resulted in residual contamination of the wastewater treatment plant system and discharge to the Pawtuxet River. Clean up of all areas of zinc contamination was scheduled by Ciba-Geigy before demolition or dismantling of buildings, equipment and process systems began.

PCB-contamination-of floor surfaces in-Building 21, Building 16/23, and Building 22 has been documented (OHM, 1986). Results of core sample analyses from the floors of these buildings revealed significant levels of PCBs (Table 10). The source of PCBs in these core samples has not been determined, but spills containing PCBs may have occurred within the buildings.

Table 11 is a list of electrical equipment containing PCBs at Ciba-Geigy's Cranston plant. PCB releases from this equipment could not

TABLE 10
PCB CORE SAMPLE RESULTS FROM THE
FLOORS OF BUILDINGS AT THE CIBA-GEIGY
FACILITY, CRANSTON, RHODE ISLAND
(OHM, 1986)

Location	⊂PCB Concentration		
Building 21	8 pp	m	
Building 16			
lst Floor	38 pp	m	
2nd Floor	12 pp	m	
3rd Floor	7 pp	m	
4th Floor	10 pp	m	
Building 23			
lst Floor	7 pp	m	
2nd Floor	17 pp	m	
3rd Floor	9 pp	m	
4th Floor	7 pp	m	
5th Floor	2 pp	m	
Building 22	• •		
1st Floor	18 pp	m	
2nd Floor	29 pp		
3rd Floor	22 pp		
4th Floor	25 pp		
5th Floor	4 pp		
6th Floor	5 pp		

TABLE 11
EQUIPMENT CONTAINING PCBs AT THE CIBA-GEIGY FACILITY,
CRANSTON, RHODE ISLAND

Equipment	Location	Kg Soln Containing PCB	Brand (Askarel) ppm PCB)
Transformer Substation 1	Behind Building 27	1,705	>600,000
Transformer Substation 3	Building 18	2,773	>600,000
Transformer Substation 4A	Between Buildings 20/26 and Building 25	1,209	>600,000
Transformer	Behind Building 37	1,107	>600,000
Transformer Main Sub 2	Adjacent to railroad track along river - Warwick side	4,182	390
Transformer Main Sub l	Adjacent to railroad track along river - Warwick side	5,114	9
Capacitor (two)	Building 22	19 19	>600,000
Capacitor (one)	Building 22 Machine Room	19	>600,000
Capacitor (two)	Building 18 First Floor	19 19	>600,000
Capacitor (two)	Building 18 Second Floor	19 19	>600,000
Capacitor (one)	Building 19 Fourth Floor	19	>600,000

be determined, but clean up of the Ciba-Geigy facility does include the removal and disposal of all PCB-containing equipment. Since most of this equipment is part of the electrical system required during the clean up phase and closing of the plant, the PCB removal will be accomplished last.

Major process buildings and facilities that have been demolished and no longer exist onsite include: Building 10, steam plant; Building 11, manufacturing; Building 14, office; Building 16/23, pilot plant; Building 17/19, manufacturing; Building 21/22, manufacturing; Building 24, zinc recovery system; Building 27, cooling tower; and the waste water treatment plant. No removal activities were being performed on the Warwick side of the facility during the VSI or SV. Ultimately, the only structures which will remain onsite following the demolition are the warehouse and laboratory buildings.

5.6 Atlantic Tubing and Rubber Company Property

Ciba-Geigy purchased <23 acres of adjoining property in Cranston from the Atlantic Tubing and Rubber Company, but has not developed this land and has no knowledge of SWMUs at that site. Ciba-Geigy has no records of the activities conducted by Atlantic Tubing and Rubber which indicate if hazardous wastes were handled at the facility. All buildings on the property have been razed. In 1982, during an excavation necessary to install a water line, some signs of discarded rubber were found by Ciba-Geigy on this property. No past or current releases from this property have been identified.

6.0 ENVIRONMENTAL INFORMATION SUMMARY

As a result of conducting an RFA at Ciba-Geigy, releases to the air, surface water, and ground water have been principally identified and may still be ongoing. Releases to the air and surface water from the facility have been documented throughout the plant's history. Analytical data to support the evidence of ground-water release(s) have been generated during the RFA. The potential for further releases from the plant, now that manufacturing operations have ceased, appears to be dependent upon two factors: (1) the presence of residual contaminants in the environment, and (2) the introduction or release of wastes during clean up and dismantling of the plant. Air, surface water, and ground-water release information will be summarized in this section.

6.1 Air

Air emissions from the Ciba-Geigy plant have occurred from different sources. Process buildings were equipped with special purpose and general purpose scrubbers for air emissions control, but at least 12 stacks were used to discharge to the atmosphere during manufacturing operations. Major components of these discharges were VOCs such as toluene and xylene. Annual discharges from Ciba-Geigy of VOCs during the early 1980s was between 50 and 100 tons. Additionally, from March 3, 1980, for an undetermined length of time (at least one year), Ciba-Geigy initiated routine burning of by-product solvent material as an alternate fuel in their boiler. This burning included the materials listed in Table 12 (Ciba-Geigy, 1981b) which may have resulted in the further emission of volatile organic compounds.

Two uncontrolled releases were noted during the PR. On June 18, 1980, Ciba-Geigy issued a letter to surrounding neighbors regarding the venting of tinuvin 328 (used as a plastics additive in food packaging) the previous day (Ciba-Geigy, 1980a). Although the material was considered nontoxic by Ciba-Geigy, the company recommended that garden

TABLE 12
BY-PRODUCT SOLVENT MATERIALS BURNED
BY CIBA-GEIGY, CRANSTON, RHODE ISLAND,
AS AN ALTERNATE FUEL IN THEIR BOILER
(Ciba-Geigy, 1981b)

Stream	Approximate Concentration
Recovered acetone	96% acetone, 4% water (100% volatile)
Acetone/toluene	40% acetone, 60% toluene (100% volatile)
Toluene/heptane	40% heptane, 60% toluene (100% volatile)

vegetables spotted with the material be discarded, and that coated swimming pools and cars be specially cleaned since tinuvin is not water soluble and cannot be washed off. On June 24, 1982, Ciba-Geigy accidentally released, over a period of 15 minutes, a mist of steam and Dowtherm-A oil (74-percent diphenyl ether and 26-percent biphenyl) from their boiler expansion tank vent line (Ciba-Geigy, 1982a). The emission resulted in a loss of approximately 25 gallons of liquid that migrated southeasterly from Building 10 toward the Warwick side of the plant.

The most widely documented evidence of air migration from the plant was from the odors associated with the chemical manufacturing processes. The principle sources of these odors included (1) the wastewater treatment plant, (2) the cooling tower, and (3) the zinc sludge from production in Building 21 and recovery in Building 24. Due to the large number of complaints received by surrounding residents, and violations of Rhode Island Air Pollution Control Regulation 17 documented by the RIDEM over the years, enforcement actions against Ciba-Geigy were initiated by the RIDEM Division of Air and Hazardous Materials. The case, however, was dismissed because closure of the plant was an overriding issue and RIDEM information was considered inadmissible (James, 1987).

On January 19, 1982, the RIDEM Division of Air and Hazardous Materials, in association with EPA Surveillance and Analysis Division, sampled air emissions around Ciba-Geigy in an attempt to identify and quantify the organic chemicals present. Results of this screening study show, as indicated in Table 13, that low levels of isopropyl alcohol, toluene, benzene, and trichlorethylene were detected well below multimedia environmental goals (MEG) set by EPA (RIDEM, 1982a).

Sampling by RIDEM for organic chemicals in the air in the area of Ciba-Geigy began again on September 30, 1982. Samples were collected for 4 to 6 hours twice a week on work days. In the samples that were analyzed, no organic chemicals were detected (RIDEM, 1982b).

TABLE 13
QUANTITIES OF CHEMICALS MEASURED IN AIR SAMPLES
NEAR CIBA-GEIGY CORPORATION
(Concentrations in ppb)
(RIDEM, 1982a)

Location	Isopropanol	Toluene	Benzene	TCE
Park View Boulevard, Cranston	<1	0.6	0.7	0.35
Milton Road-Rathburn Avenue, Warwick	40.4	18.2	1.2	0.6
Holmes Road-Rathburn Avenue, Warwick	13.8	4.4	1.6	0.35
Larch Avenue-Vine Avenue, Warwick	<1	2.3	1.3	0.31
MEG (Allowable)	950	240	24	238

The RIDEM also conducted surface soil sampling in the area of Ciba-Geigy to determine if volatile compounds emitted from the facility were responsible for organic contamination of soils offsite. Analyses were performed by Rhode Island Department of Health, Division of Laboratories. Sampling locations for the first round of samples, collected July 23, 1986, are shown in Figure 7 (RIDEM, 1986). The sampling locations included three homes near Ciba-Geigy downwind of the prevailing wind from the plant, two locations further downwind, one location south of the plant in Warwick, and a background location in Results (Table 14) presented in October 1986 Roger Williams Park. showed (1) low concentrations of some volatile organics, including toluene and xylene, which were abundantly used by Ciba-Geigy, at the three locations closest to the plant, (2) apparently normal concentrations of polynuclear aromatic hydrocarbons (PAHs), which are often found in soils in urban areas and are produced by sources of combustion, including boilers, automobiles, and wood stoves, and are also formed during the degradation of some organic matter in soil, and (3) high levels of tinuvin, manufactured by Ciba-Geigy, at the sampling locations closest to and furthest from the plant. Zinc was also present in relatively low concentrations in all samples collected. In general, the sampling results suggested that additional sampling must be conducted before any substantive conclusions could be drawn.

In December 1986, results from a second round of soil sample collection, performed on November 12, 1986, were presented by RIDEM (Table 15). One sample was collected in a rural area of North Kingstown (sample A), and three others in urban residential areas outside of Cranston (samples B, C, and D) (RIDEM, 1986a). These locations were chosen to determine if the substances analyzed for, as suggested by their presence in the first round of sampling, were possibly ubiquitous. The sample 2 location from the July 23, 1986, sampling was resampled (sample 2A) and analyses were also performed on two tomatoes

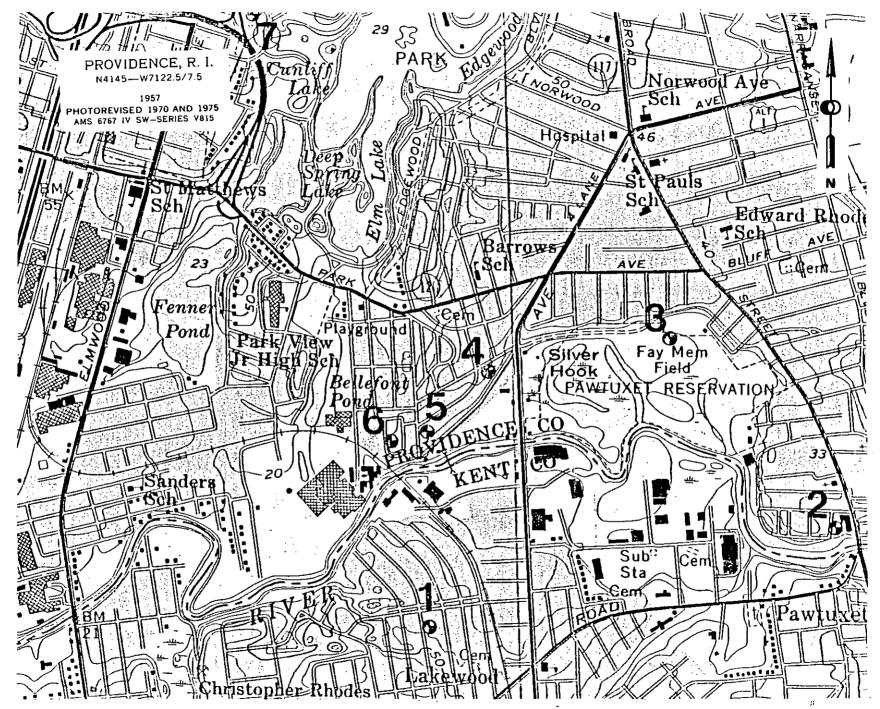


FIGURE 7
SOIL SAMPLING LOCATIONS AROUND THE CIBA-GEIGY PLANT,
CRANSTON AND WARWICK, RHODE ISLAND, JULY 23, 1986
(RIDEM, 1986)

TABLE 14
RESULTS OF THE JULY 23, 1986, SOIL SAMPLING AROUND THE CIBA-GEIGY PLANT, CRANSTON AND WARWICK, RHODE ISLAND (RIDEM, 1986)

			•	Samp	le Number			
, 	MDL	1	. 2	3	4	5	6	7
Metal (ppm)								
Zinc	-	25.1	105.2	19.9	33.3	32.6	40.2	65.
Molatile Organics (ppm)							40	
hloroform *- Bromodichloromethane	0.5 <− 0.5	8 ND	0.5 ND	2 ND	6 ND	6 ND	40 1	6 ND
Dibromochloromethane	0.5	ND	ND	. ND	ND	ND	иĎ	ND
Bromoform	0.5	ND	ND	ND	ND	ND	ND	ND
,1,1-trichloroethane	0.5	ND	ND	ND	ND	NĎ	0.8	ND
Cárbon tetrachloride	0.5	ND	МD	ND	ND	ND	0.5	ND
「richloroethylene	0.5	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	0.5	ND	ND	ND	ND	ND	ND	ND
,1,2,2-tetrachloroethane	0.5	ND	ND	МD	ND	ND	ND	ND
Dichloromethane ★ — L,1-dichloroethene	→ 0.5 0.5	20 ND	2 ND	1 ND	10 ND	8 ND	70 ND	10 ND
.,1-dichroroethene								
,2-dichloroethene	0.5	ND	ND	ND	ND	ND	0.8	ND
l,l-dichloroethane	0.5	ND	ND ND	ND	ND	ND	ND ND	ND
l,2-dichloroethane l,2-dichloropropane	0.5 0.5	ND ND	ND ND	ND DN	ND ND	ND ND	ND · ND	ND ND
, 2-d rem or opropane								
,3-dichloropropene (cis & trans)	0.5	ND	ND	ND	ND	ND	ND	, ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND
Benzene	0.5	ND	ND	ND	ND	ND	0.7	ND
Toluene	→ 0.5	0.6	ND	ND	0.6	0.7	2	0.9
Ethylbenzene	0.5	ND	ND	ND	ND	ND	0.5	ND
(ylene —	-> 1.0	ND	ND	. ND	0.9	1	3	2
2-chloroethylvinylether	0.5	ND	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydro	<u>icarbon E</u>	xtracta	bles (ppt)	···	.		
Naphthalene	10	ND	ND	18	91	ND	ND	34
Acenaphthylene	, 15	ND	92	57	680	43	23	250
Acenaphthene	15	ND	180	51	ND	ND	ND	ND
Fluorene	15	ND	330	110	690	ND	ND	33
Phenanthrene		66	4500	2000	5800	240	250	350
Anthracene	10	ND	550	130	4900	ND 400	ND 4.6.0	56
Fluoranthene	>- 15	190	6700 4700	2300 1400	14000 12000	490 370	460 360	690 550
Pyrene -	>15	140		1400	15000	3/0	500	330
			\uparrow		Λ	-	1	
			(CONTINU	FN۱	}		ŧ	

TABLE 14
RESULTS OF THE JULY 23, 1986, SOIL SAMPLING AROUND THE CIBA-GEIGY PLANT, CRANSTON AND WARWICK, RHODE ISLAND (RIDEM, 1986) (CONTINUED)

				Sample	Number			
	MDL	1	2	3	4	5	6	7
Polynuclear Aromatic Hyd	rocarbon F	Extractab	oles (ppb)	(continu	ieq)			
Benzo(a)anthracene	15	74	1800	520	3100	220	180	400
Chysene	- 15	53	2300 -	3700	6300	140	120	330
Benzo(b)fluoranthene	>20	ND	1800	560	4200	180	ND	680
Benzo(k)fluoranthene	20	ND	3200	470	2700	180	250	350
Benzo(a)pyrene	> 25	ND	3600	550	4000	230	ND	680
Ideno(1,2,3)pyrene	50	ND	ND	600	1500	ND	ND	ND
Dibenzo(a,h)anthracene	50	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	50	ND	ND	440	1300	ND	ND	ND
Dacthal*	150	910	ND	ND	ND	ND	ND	ND
Others (ppb)								
p-cresol	150	ND	ND	ND	ND	ND	ND	ND
Phenyl ether	50	ND	ND	ND	ND	ND	ND	ND
Biphenyl	25	ND	ND	48	950	ND	34	ND
Tinuvin 327	50	ND	11000	ND	ND	ND	2100	110
Tinuvin 328	150	110	1500	ND	ND	ND	420	36
Prometon	150	ND	ND	ND	ND	ND	ND	ND

^{*} Not a polynuclear aromatic hydrocarbon

Samples collected July 23, 1986

Analyses performed by the Rhode Island Department of Health, Division of Laboratories.

ND - Not detected at concentrations above the Minimum Detection Limit (MDL).

MDL- Minimum Detection Limit; the level below which the chemical can not be detected with presently available instrumentation.

TABLE 15
RESULTS OF THE NOVEMBER 12, 1986 SOIL SAMPLING CONDUCTED BY THE RIDEM (RIDEM, 1986)

<u> </u>				Samp 1	e Numbe	r		=======================================
	MDL	2A	Α	В	С	D	RT	0T
Volatile Organics (ppm)								
Chloroform	0.5	ND	NĄ	ND	ND	ND	ŅΑ	ŅA
Bromodichloromethane	0.5	ND	NĀ	ND	ND	ND	ŅΆ	ŅΑ
Dibromochloromethane	0.5	ND	NĀ	ND	ND	МD	NA	ŅΑ
Bromoform	0.5	ND	NA	· ND	ND	ΝD	ΝΆ	ŅΑ
l,l,l-trichloroethane	0.5	ND	NA	ND	ND	ND	NA	ΝA
Carbon tetrachloride	0.5	ND	NA	ND	ND	ND	ΝĀ	ŇA
Trichloroethylene	0.5	ND	NA	ND	ND	ND	ΝĄ	NA
1,1,2-trichloroethane	0.5	ND	NA	, ND	ND	ND	NA	NA
1,1,2 tricinor detinane	0.5	110	T)	. 113	110	110	()	Ĭ,
Tetrachloroethylene	0.5	ND	ΝA	ND	ND	ND	NÀ	NΑ
1,1,2,2-tetrachloroethane	0.5	. ND	ŃΑ	ND	ND	ND	NA	NΆ
Dichloromethane	0.5	ND	ŃΑ	ND	ND	ND	NΑ	NΆ
l,l-dichloroethene	0.5	ND	ŅΑ	ND	ND	ND .	NA	NΑ
1 2 dishlawaathana	0.5	MD	N A	ND.	ND	ND	NA) NA
1,2-dichloroethene	0.5	ND ND	ŅA NA	ND ND	ND	ND ND	NA NA	NA NA
1,1-dichloroethane 1,2-dichloroethane	0.5 0.5	ND ND	NA NA	ND ND	ND	ND	NA	NA NA
1,2-dichloropropane	0.5	ND	NA NA	ND	ND	ND	NA	NA NA
1,2-diction opi opalie	0.5	NU		NU	ND	ND	110	T)
1,3-dichloropropene (cis & trans)	0.5	ND	NA	ND	ND	ND	NA	NΑ
Chlorobenzene	0.5	ND	NΆ	ND	· ND	ND	NA ⁱ	ΝA
Benzene	0.5	ND	NΆ	ND	ND	ND	NA [']	NΆ
Toluene	0.5	ND	ΝΆ	ND	ND	ND	NA	ŊΆ
Ethylbenzene	0.5	ND	Ŋ ŊĄ	ND	ND	ND	NA NA	NA NA
Xylene	1.0	ND	ΝĄ	ND	ND	ND	NA	NA
2-chloroethylvinylether	0.5	ND	NA NA	ND	ND	ND	NA	NA
, ,			į		112	110	,,,,	1471
Polynuclear Aromatic Hydrod	carbon Ex 75			ND	ND	NO	ND	ND
Naphthalene	100	ND ND	ND ND	180	ND	ND ND	ND	ND ND
Acenaphthylene Acenaphthene	150	ND	ND	ND	ND	ND	ND	ND
Fluorene	150	ND	ND	ND	ND	ND	ND	ND
	~~~				,,,,			
Phenanthrene	100	3400	ND	2300	520	ND	ND	ND
Anthracene	75	400	ND	300	ND	ND	ND	ND
Fluoranthene	100	5800	13	4100	820	ND	ND	ND
Pyrene	150	-5800	10	3500	820	ND	ND	ND

(CONTINUED)

TABLE 15 RESULTS OF THE NOVEMBER 12, 1986 SOIL SAMPLING CONDUCTED BY THE RIDEM (RIDEM, 1986) DACHGROUND

(CONTINUED)

our of city Sample Number MDL 2A RT OT. Polynuclear Aromatic Hydrocarbon Extactables (ppb) (continued) Benzo(a)anthracene 250 6800 ND 2400 720 ND ND ND 200 4700 ND 2000 480 ND ND ND Chysene 3200 ND ND ND Benzo(b)fluoranthene 250 ND ND ND 1300 ND ND ND ND Benzo(k)fluoranthene 200 1500 ND Benzo(a)pyrene 300 14000 ND 5300 1300 ND ND ND ND Ideno(1,2,3)pyrene 500 6600 ND 2400 ND ND ND Dibenzo(a,h)anthracene 500 ND ND ND ND ND ND ND Benzo(g,h,i)perylene 500 5700 ND 2500 ND ND ND ND Dacthal* 200 6800 ND ` ND ND ND ND ND 1900 Bis(2-ethylhexyl)phthalate* 500 1000 ND 7300 880 39000 ND Hexanedioic Acid Dioctyl Ester* ND ND ND ND ND Others (ppb) 200 ND ND ND ND ND ND p-cresol ND ND: ND Phenyl ether 150 ND: ND ND ND ND ND ND Biphenyl 100 ND 39 ND ND ND Tinuvin 327 500 ND ND ·ND ND ND ND ND Tinuvin 328 400 ND ND ND ND ND ND ND Prometon 400 ND ND ND ND ND ND ND Metal (ppm)

34.1

NA

151.0

230.0

88.7

NA

NA

Zinc

Samples 2A, B, C, D collected November 12, 1986. Sample A collected September 1986. Analysis performed by he Rhode Island Department of Health, Division of Laboratories.

Sample No.	Location
2A	Broad Street and Woodbury Road, Cranston
A	Rural Location – North Kingstown
В	East Side - Providence
С	Mount Pleasant - Providence
D	Buttonwoods - Warwick
RT	Red Tomato
OT	Orange Tomato
	- 30

Not a polynuclear aromatic hydrocarbon.

This compound appears to be present but its presence cannot be confirmed or qualified.

NA - Not analyzed.

ND - Not detected at concentrations above the Minimum Detection Limit (MDL).

MDL- Minimum Detection Limit; the level below which the chemical cannot be detected with presently available instrumentation.

(samples RT and OT) grown near sample location 4 from the previous sampling event. The results did not reveal the presence of any volatile organics or tinuvin in any of the samples. This may indicate that the area immediately surrounding Ciba-Geigy is more contaminated with these substances than in other urban areas. Results from both rounds of sampling, however, were not used to conclusively determine that Ciba-Geigy was the source of the substances present near the plant.

The presence of PAHs in samples from urban areas (samples B, C and D) and the relatively low concentration found in the rural sample (sample A) tend to confirm that the PAHs are probably associated with the urban area with high concentrations resulting from fuel combustion (RIDEM, 1986a).

On April 15, 1987 RIDEM completed its sampling program developed to determine if contamination as a result of air emissions was present in soils around Ciba-Geigy. Ten samples were taken in the area of Ciba-Geigy including areas to the north and south of the facility. Sampling locations for the third round of sample collection are shown in Figure 8 (RIDEM, 1987). Results (Table 16) presented to EPA Region I showed no volatile organic compounds present (except for tetrachloroethane at 0.7 ppm), indicating that VOC contamination was not widespread as potentially suggested by the July 23, 1986 sampling round. Various PAHs and phthalates were detected in the third round samples which further support the conclusion that these compounds can no be attributed to a particular source since levels of PAHs and phthalates were found in virtually all samples collected during each sampling round.

The April 1987 sampling revealed the low level presence of tinuvin 328 at sample location 14 (840 ppb) and tinuvin P at sample location 13 (10 ppb) and sample location 10 (20 ppb) only. The July 1986 sampling revealed the presence of tinuvins 328 and 327 at four of the seven locations sampled. The November 1986 sampling of locations away from Ciba-Geigy did not reveal the presence of tinuvin, suggesting Ciba-Geigy

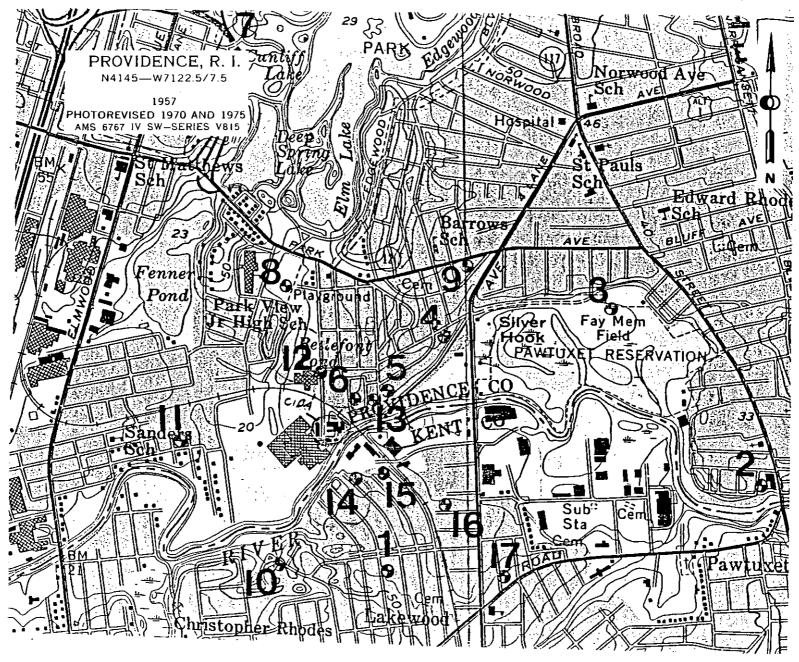


FIGURE 8
Soil Sampling Locations Around the Ciba-Geigy Plant,
Cranston and Warwick, Rhode Island
April 15, 1987

TABLE 16

RESULTS OF THE APRIL 15, 1987 SOIL SAMPLING CONDUCTED BY RIDEM AROUND THE CIBA-GEIGY PLANT, CRANSTON, AND WARICK, RHODE ISLAND.

(RIDEM, 1987)

					Samp	le Numbe	<u>er</u>				
	MOL	8	9	10	. 11	12	. 13	14	15	16	1
Volatile Organics (ppm)								,			
Chloroform	0.5	ND	ND	ND	ND	DИ	ND	ND .	ND	ND	N
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Bromoform	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
BI GIRCI GI III	0.5	115	110	110	110	110	.,,,		.,,,	.,,	
l,l,l-trichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Trichloroethylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
1,1,2-trichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Tetrachloroethylene .	0.5	ND	ND	NO	ND	ND	ND	ND	ND	ND	N
1,1,2,2-tetrachloroethane	0.5	0.7	ND	ND	ND	ND	ND	ND	ND	ND	N
Dichloromethane	0.5	ND	ND	ND	ND	ND .	ND	ND	ND	ND	N
Dichioromethane 1,1-dichloroethene	0.5	ND	ND	ND ND	ND	ND	ND	ND	ND	ND	N
1,1-dichioroethelle	0.3	NU	NU	NU	NU	IID	110	HU.	NO.	IID	,,
1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
1,1-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
1,2-dichloroethane	0.5	ND	ND	ND	ND	ИÐ	ND	ND	ND	ND	N
1,2-dichloropropane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	١.
1,2-d (Cirror op) opane	0.5	ND	NU	. 110	110	,,,,	110		110	110	
1,3-dichloroprapene	0.5	ND	ΝD	ND	ND	ND ·	ND	ND	ND	ND	٨
(cis & trans)											
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
To luene	0.5	ND	ИD	ИD	ND	ND	ND	ND	ND	ND	٨
,											
Ethy Ibenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	١
Xylene	1.0	ND	.ND	ND	ИD	ND	ND	NO	ND	ИD	١
Polynuclear Aromatic Hydroc	arbon F	xtracta	hles (nn	ıh)							
Naphthalene	100	ND	ND	ND	ND	190	ND	ND	ОИ	ND	NC
Acenaphthy lene	100	NĐ	200	ND	ND	380	260	ND [*]	ND	ND	NC
Acenaphthene	100	ND	, ND	ND	ND	300	ND	ND	ND	ND	N(
Fluorene	100	ND	140	ND	100	620	ND	ND	ND	ND	NO
	<b>→-</b> 100	ND ·	1500	360	840	6600	780	360	100	ND	N [
Anthracene	100	ND	140	ND	ND	700	140	ND.	ND	ND	N[
	<b>-&gt;</b> 100	120	340	3500	1200	8600	3100	540	280	140	NE
	100 حــ	140	2700	380	1100	8900	2000	360	240	140	NE
Pyrene											
Pyrene							. 200				615
Pyrene - Benzo(a)anthracene	100	ND	1600	260	400	4200	1700	260	160	ND	NE
Benzo(a)anthracene			1600 <b>720</b>	260 140	400 340	4200 1100	1700	260 ND	160 ND	ND ND	
Benzo(a)anthracene Chysene	100	ND ND	720	140	340	1100	1100		ND	ND	N!
Benzo(a)anthracene Chysene		ND						ND			NE NE NE

(CONTINUED)

TABLE 16

RESULTS OF THE APRIL 15, 1987 SOIL SAMPLING CONDUCTED BY RIDEM AROUND THE CIBA-GEIGY PLANT, CRANSTON, AND WARICK, RHODE ISLAND.

(RIDEM, 1987)

(CONTINUED)

					San	nple Nur	<u>mber</u>				
	MDL	8	9	10	11	12	13	14	15	16	1
Polynuclear Aromatic Hydr	rocarbon	Extract	ahlae (n	ah) (cant	inued)						
	100	ND	641		620	11000	5300	ND	ND	ND	N
Ideno(1,2,3)pyrene	100	ND	170	O ND	ND	5700	ND	ND	ND	ND	N
Dibenzo(a,h)anthracene	100	ND	. 340		ND	ND	ND	ND	ND	ND	N
Benzo(g,h,i)perylene	, 100	ND	120	ם א כ	ND	ND	ND	ND	ND	GN	N
Others (ppb)											
p-cresol	. 75	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
Phenyl ether	75	ND	GN	ND	GN	ND	ND	, ND	ND	ND	N
Biphenyl	50	ND	ND	ND	ИD	ND	ND	ND	ND	ND	N
Tinuvin 327	500	ND	ND	ŇD	NO	ND	, ND	ND	ND	ND	N
Tinuvin 328	500	ND	ND	ND	ND	ND	ND	840	ND	ND	N
Prometon	400	ПO	ND	ND	NO	ND	ΝD	ND	ND	ND	N
Dacthal :	200	ND	ŃΟ	ND	ИÐ	ИD	ND	ND	ND	ND	N
4-tertamylphenol	25	ND	ПN	40	ОN	В	ΝD	ND	ND	NO	N
2,4-di-tertbutylphenol	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	N
N-phenyl-L-napthylamine	75	NO	ND	ND	ND	ND	ND	ND	ND	ND	N
Tinuvin P	10	ND	ND	20	ΝĐ	ND	10	ND	ND	ND	N
diethyl phthalate	200	ND	NO	1300	2300	5200	2400	5200	1500	1300	110
Dibutyl phthalate	200	NO	400	ND	240	740	1300	900	1300	820	38
Butylbenzyl phthalate	500	190	ND	ND	ND	8400	2600	ND	ND	ND	N
bis(2-ethylhexyl)phthalat	e 500	19000	11000	57000	1800	4500	45000	5800	200000	2900	84
DOT	500	ОИ	ND	ND	ND	ND	1800	NĐ	ND	ИÐ	N
DDE	500	ND	ND	2200	ND	ND	ВN	ND	ND	ND	N

ND -Not detected at concentrations above the Minimum Detection Limit (MDL)

ppm-Parts per million.

ppb-Parts per billion

Samples collected April 15, 1987.

Analyses performed by the Rhode Island Department of Health, Division of Laboratories.

MDL-Minimum Detection Limit; the level below which the chemical cannot be detected with presently available instrumentation.

as a source for the tinuvin found earlier. The latest results, however, did not confirm the incience of tinuvins in the soil near Ciba-Geigy, indicating that tinuvin contamination was not widespread. Additionally, other compounds thought to be associated with chemical manufacturing operations at Ciba-Geigy were tested for and not found (except for 4-tertamyl phenol at 40 ppb).

Based on the results from the three rounds of sampling, RIDEM concluded that there is no widespread contamination of soil offsite by previous air emissions from Ciba-Geigy and any contamination present in the area surrounding Ciba-Geigy does not present a significant health risk. Versar concurs with these findings.

The potential for further release and migration via the air pathway has been reduced by the cessation of chemical manufacturing operations at Ciba-Geigy. Residents in the surrounding neighborhoods remain the most likely populations to be affected by residual contamination in the environment around Ciba-Geigy or by a release during the plant clean up and demolition. The levels of chemicals found near Ciba-Geigy, however, do not indicate a significant health risk to neighbors of Ciba-Geigy via inhalation of dust, ingestion of soil, or skin contact (RIDEM, 1986). The uptake of contaminants by garden vegetables was not considered by RIDEM due to inadequate information. The potential for ground-water contamination from offsite soil leachate was also not evaluated, since area residents are served by public water supplies. An EPA evaluation of these potential concerns was not within the scope of the RFA. Further studies by Ciba-Geigy or EPA may determine health risks associated with offsite contamination.

### 6.2 Surface Water Migration Pathway

Surface water migration via the Pawtuxet River is the most visible contaminant pathway from the Ciba-Geigy facility. Evidence of releases from the plant to the river have been documented and discussed in previous sections of this report. Contaminant migration via the Pawtuxet

River potentially affects a much larger population than air emissions. Pollution of the Narragansett Bay and its upper reaches in the Tidewater subarea, including the Providence River and the Pawtuxet River, is of major environmental concern to many people. Potential exposure results principally from direct contact with the water, sediments and/or accumulation in the food chain.

Pollution of the surface waters in the area cannot be attributed to one source. The highly urban and industrialized nature of the Providence area gives rise to a number of municipal and industrial discharges which collectively contribute to the overall pollution problem. One study conducted by the U.S. EPA, Environmental Research Laboratory in Narragansett, Rhode Island (Lake et al., 1981), however, links certain compounds found in samples of edible marine organisms and suspended particulate material obtained from Narragansett Bay with chemical plant discharges in the upper bay. Evidence of past releases from Ciba-Geigy may be found in the underlying sediments of the Pawtuxet River where certain compounds manufactured at the plant may have accumulated.

Analytical data found during the PR linking discharges from Ciba-Geigy to contaminant migration in the Pawtuxet River and associated surface waters, however, was inconclusive. On September 20 and 21, 1981, personnel from EPA's Surveillance and Analysis Division sampled Ciba-Geigy's influent and effluent, and the Pawtuxet River. The three river sampling locations (Figure 9) were located upstream of the Ciba-Geigy treatment plant effluent, downstream midway between the effluent and the Pawtuxet Cove dam, and just upstream of the dam (EPA, 1981a). Table 17 presents the results of the sampling effort. The data was evaluated by EPA and was used only as a guide to what was present in the effluent and river.

During the SV, four river sediment samples (SD1, SD2, SD3, and SD4) were collected and analyzed for volatile organic, semivolative organic, pesticide/PCB, and total metal parameters. The samples collected

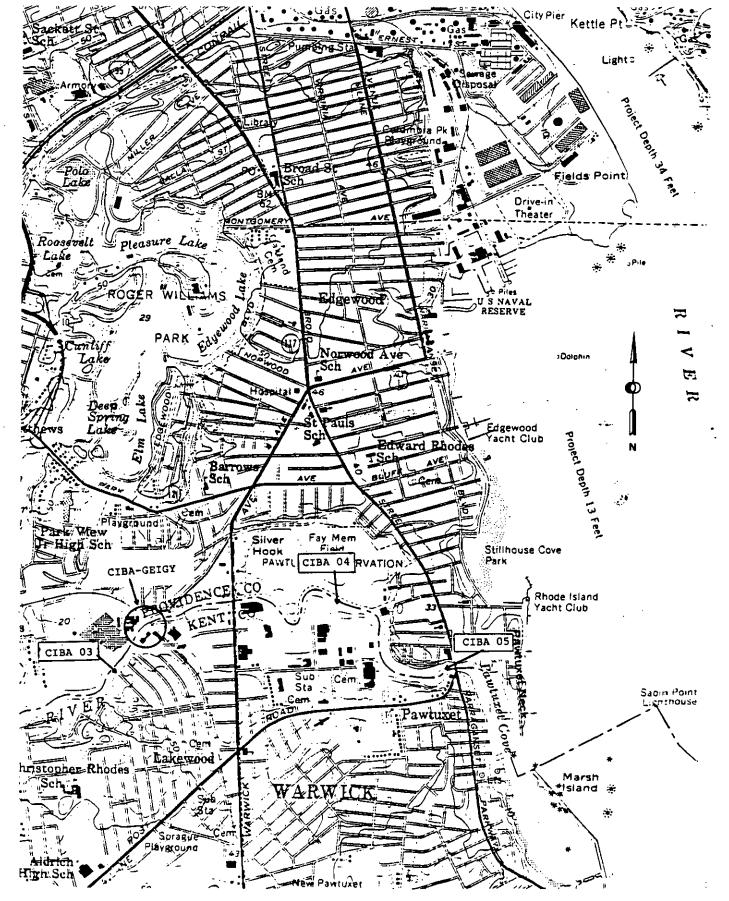


FIGURE 9
PAWTUXET RIVER SAMPLING, SEPTEMBER 20-21, 1986
(EPA, 1981a)

TABLE 17
PARTIAL ANALYTICAL RESULTS OF EFFLUENT AND RIVER SAMPLING
BY EPA, SEPTEMBER 21-22, 1981
(EPA, 1981a)

	Con	centration	(ppb)	
	Effluent	Ciba 03	Ciba 04	Ciba 05
Organic Compounds				
Benzene	66	<1	<1	<1
Chlorobenzene	1,604	NĐ	48	42
1,1,1-trichloroethane	178	1	2	4
Chloroform	446	1	8	8
Ethylbenzene	2,150	<1	55	51
Methylene chloride	768	1	4	2
Toluene	15,898	1	.154	108
2,4-dichlorophenol	$1,130/.1320^{a}$	ND	19	11
Phenol	.145/.224 ^a	9 .	11	8
Nitrobenzene	594/185	ND	ND	ND
Bis(2-ethylhexyl)phthalate	6/10	11	424	361
Diethyl phthalate	301/70	38	16	77
Anthracene	2/ND ^a	ND	ND	ND
<u>Metals</u>				
Arsenic	<3	<3	<3	<3
Cadmium	<4	<4	<4	<4
Chromium	29	8	<8	<8
Copper	19	48	57	66
Lead	43	22	24	51
Mercury	<1	<1	1.6	<1
Nickel	96	49	62	67
Selenium	<4	<4	<4	<4
Zinc	400	83	134	118
Miscellaneous Compounds				
Tinuvin #1	ND	ND	ND	ND
Tinuvin #2	9,720	ND	88	57
2,4,8-trichlorobenzofuran 5-chloro-2(2,4,-	233	ND	1	ND
dichlorophenoxy)phenol	656	ND	7	4

ND = Not detected.

a = Duplicate analysis.

furthest downstream (SD1) and furthest upstream (SD4) were also analyzed for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and 2,3,7,8-tetrachlorodibenzo-p-furan (TCDF). Figure A in Attachment A shown the sampling location.

River sediment sampling results are presented in Table 18. The results indicate that metals and base/neutral extractable organic compounds are predominately present in the river sediments. No pesticides or PCBs were detected in any of the samples; these results were not included in Table 18. Additionally no dioxin or furan was detected in the two samples analyzed for these parameters.

The highest concentrations of chromium (1,800 ppm), lead (369 ppm), mercury (23 ppm), and zinc (2,280 ppm) were all found in the furthest upstream sediment sample. Tetrachloroethylene (1,700 ppb), fluoranthene (6,500 ppb), pyrene (6,500 ppb), benzo(k)fluoranthene (3,100 ppb), and phenanthrene (4,300 ppb) were also found at the highest concentrations in the upstream sample. Conversely, the highest levels of cadmium (16 ppm), manganese (560 ppm), acetone (28 ppb), toluene (30 ppb), bis(2-ethylhexyl) phthalate (19,000 ppb), and di-n-octyl phthalate (6,400 ppb) were all found in downstream sediment samples which would suggest that Ciba-Geigy is a particular source attributable for the presence of these compounds.

Analytical results received from Ciba-Geigy regarding split sediment samples, however, showed a similar disparity. The highest concentrations of toluene (230 ppb), acetone (4,700 ppb), 2-butanone (740 ppb), acenaphthylene (2,200 ppb), fluoranthene (17,000 ppb), chrysene (5,100 ppb), chromium (827 ppm), lead (47 ppm), and zinc (1,700 ppm) were all found in the furthest upstream sample. Meanwhile the highest levels of chlorobenzene (130 ppb), bis(2-ethylhexyl)phthalate (8,700 ppb), fluorene (210 ppb), dieldrin (890 ppb) cadmium (3.9 ppm), and mercury (0.62 ppm) were all found in downstream sediment samples. Most of the compounds detected in both Ciba-Geigy and EPA downstream sediment samples may be associated with constituents in the facility's previous wastewater discharges.

## TABLE 18 PAWTUXET RIVER SEDIMENT SAMPLING RESULTS^a CIBA-GEIGY SAMPLING VISIT June 11-12, 1987

	<del></del>	Samr	ole Numbers	
	SD1	SD2	SD3	SD4
			·	
Metals (ppm)		20	26	ND (AE)
Antimony	44	32 6.6	26 [2.8]	ND(45) 9.3
Arsenic Barium	[6.5] 182	133	[18]	222
Beryllium	[1.5]	[1.2]		
Cadmium	16	3.0	ND(1.3)	5.9
Chromium	79	310	14	1,080
Iron	18,600	19,200	9,380	21,100
Lead	237	188	17	369
Magnesium	[1,880]	2,820	[1,100]	[3,610]
Manganese	560	² 302	100	266
Mercury	10	6.3	ND(11)	23
Nickel	33	ND(15)	ND(7.8)	ND(22)
Silver	ND(5.1)	NĎ(4.0)	ND(2.1)	ND(5.9)
Vanadium	[29]	33	[7.8]	43
Zinc .	389	528	52	2,280
Volatile Organics (ppb)	·			
Methylene Chloride	67B	560BJ	4BJ	1,200B
Acetone	28	830BJ	<b>5</b> J	2,000BJ
Toluene	30	ND(910)	1J	ND(1,200)
Tetrachloroethylene	ND(13)	ND(910)	ND(6)	1,700
2-Butanone	ND(26)	2,400B	ND(13)	4,000B
Semivolatile Organics (p	pb)			
2,4-Dimethylphenol	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
1,2-Dichlorobenzene	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
1,4-Dichlorobenzene	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
2-Chlorophenol	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
Phenol	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
Fluoranthene	1,400	ND(15,000)	ND(4,100)	6,500
Pyrene	1,100	ND(15,000)	ND(4,100)	6,500
Butylbenzylphthalate	130J	ND(15,000)	ND(4,100)	ND(3,800)
Bis(2-ethylhexyl)	10.000	ND (15 000)	19,000	2,000J
phthalate	10,000 7 <b>90</b> J	ND(15,000) ND(15,000)	ND(4,100)	3,700J
Chrysene Di-n-octyl phthalate	490J	ND(15,000)	6,400	ND(3,800)
Benzo(b)fluoranthene	1,000	ND(15,000)	ND(4,100)	3,400J
Benzo(k) fluoranthene	ND(870)	ND(15,000)	ND(4,100)	3,100
Benzo(a)pyrene	520J	ND(15,000)	ND(4,100)	2,700J
Benzo(g,h,i)perylene	310J	ND(15,000)	ND(4,100)	1,800J
Phenanthrene	700J	ND(15,000)	ND(4,100)	4,300
		- ( ) /		,

(CONTINUED)

# TABLE 18 PAWTUXET RIVER SEDIMENT SAMPLING RESULTS^a CIBA-GEIGY SAMPLING VISIT June 11-12, 1987 (Continued)

		Sam	ple Numbers	
,	SD1	SD2	SD3	SD4
Ideno(1,2,3-cd)pyrene	ND(870)	ND(15,000)	ND(4,100)	1,500J
Dimethyl phthalate	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
Anthracene	ND(870)	ND(15,000)	ND(4,100)	ND(3,800)
Benzo(a)anthracene	520J	ND(15,000)	ND(4,100)	ND(3,800)
4-Chloroaniline	ND(870)	ND(15,000) ND(15,000)	ND(4,100) ND(4,100)	ND(3,800) ND(3,800)
Dibenzofuran	ND(870)	MD(15,000)	ND(4,100)	ND(3,000)
Dioxin and furan (ppt)				
2,3,7,8-Tetrachloro-	110 (00)	*1.8	110	ND (02)
diphenyl-p-dioxin	ND(23)	· NA	NA	ND(83)
2.3.7.8-Tetrachloro-	ND (0.4)	NA	NA	ND (70)
diphenyl-p-furan	ND(34)	NA	NA	ND(78)

ND( ) - Compound not detected at level indicated.

J - Presence of compound detected, value estimated.

B - Compound was detected in the QC blank.

^{[]-} Result is a value greater than the instrument detection limit, but less than the contract required detection limit.

aResults are a compilation of the reported analytical data. HSL analytical parameters which do not appear in this table were not detected by the respective contract laboratories. Metals analyses were performed by Cambridge Analytical Associates, Boston, Massachusetts on 7/20/87. Dioxin and furan analyses were performed by Enseco-California Analytical Laboratory, West Sacremento, California on 6/29/87. Other organic analyses were performed by ETC-Toxicon, Baton Rouge, Louisana as reported on 7/31/987.

Regardless of the source, the levels detected indicate that the river sediments in the vicinity of Ciba-Geigy contain elevated levels of some compounds which may pose a threat to human health or the environment. It should be noted that although relatively high values for methylene chloride, acetone, and 2-butanone were reported in some of the samples (Table 18), these concentrations cannot be considered valid since these parameters were also detected in the method blanks analyzed by the EPA contract laboratory. Results from the split sediment samples collected by Ciba-Geigy did reveal, however, the presence of acetone in all four samples and 2-butanone in the furthest upstream sample. The levels detected for both of these compounds were estimated values.

The potential for release to the Pawtuxet River from residual contamination at Ciba-Geigy needs to be determined since analytical data documenting past releases or discharges is inconclusive for this pathway. Ciba-Geigy principally discharged to the Pawtuxet River under an NPDES permit and concentrations of contaminants found in the plant's effluent were limited by the permit. The effects of regulated or unregulated discharges to human health or the environment has not been determined. Further, the ground water contribution to flow of the Pawtuxet River in the vicinity of Ciba-Geigy may also be responsible for the introduction of contaminants to the river.

#### 6.3 Ground Water

Releases to the ground water at Ciba-Geigy have been identified in the former Building 11 area where toluene was detected in the vicinity of the building's sump at the time of demolition. Prior to the RFA no additional information as been available regarding the quality of ground water beneath the facility. During the VSI several recently installed ground-water level measurement pipes were noted throughout the facility on both Cranston and Warwick sides of the Pawtuxet River. Versar was informed by Ciba-Geigy that although these pipes were not installed for monitoring purposes they could be used to collect samples to give an indication of any contaminants present in the ground water.

Seven of the twelve pipe locations were sampled during the SV. These location sincluded the former silt pile area, the wastewater treatment plant, and the former production area. Figure A in Attachment A shows the sampling locations. Depth to water in these pipes ranged from approximately 4 feet to over 12 feet. Ground water samples were collected using a peristaltic pump and analyzed for volatile organics, semivolatile organics, pesticides/PCBs, and total metals. Sample results are shown in Table 19.

The results show the presence of selected inorganic and organic contaminants in the ground water. Overall, the most significant contamination appears to be limited to the former production area. Only two samples (GW6, wastewater treatment plant, and GW8, silt pile area) were taken outside of this area. Except for manganese (5.47 ppm) in GW6 and zinc (5.36 ppm) in GW8 these locations can essentially be considered control locations with respect to contaminant levels. The elevated levels of manganese and zinc as well as the low level presence of methylene chloride and acetone (Table 19) any indicate a potential release, but the upgradient locations of these two points from any identified SWMU and the lack of additional ground-water data in these areas suggest otherwise. Based on the identified release from SWMU 10, wastewater pipeline break (Section 4.10) and the potential for exposure to SWMU 5, silt pile (Section 4.5) however, Versar believes that additional ground-water data should be collected to fully define pollutant migration and the quality of ground water from these areas.

In the former production area, the groundwater was predominately found to contain elevated levels of metals and volatile organics; some semivolatile organics were also detected. No PAHs, pesticides, or PCBs were found in any of these samples. Typically, downgradient sampling locations showed higher concentrations of volatile organic fractions indicating potential pollutant migration toward the river. In general, contaminants of concern were found in each ground-water sample collected in the former production area, suggesting the need for further investigation.

TABLE 19
GROUND WATER SAMPLING RESULTS^a
CIBA-GEIGY SAMPLING VISIT
June 11, 1987

				Sample Number	s		
	GWI	GW2/2A ^b	GW3	GW4	, GW5	GW6	GW8
Metals (ppb)							
Ant imony	ND(58)	ND(58)	ND(58)	ND(58)	ND(58)	ND(58)	ND(58)
Arsenic	ND(2.8)	609/365	[6.1]	ND(2.8)	395	[4.0]	ND(2.8)
Barium	[43]	[48]/ND	[187]	ND(30)	242	[87]	ND(30)
Cadmium	ND(4.7)	ND(4.7)	ND(4.7)	ND(4.7)	ND(4.7)	ND(4.7)	• ND(4.7)
Chromium	ND(9.4)	13/ND	ND(9/4)	15	21	ND(9.4)	ND(9.4)
Lead	[1.7]	17/NĎ	ND(1.7)	178	93	[2.3]	5.18
Manganese	1,060	593/577	ND(6.5)	64	838	5.470	18
Mercury	ND(0.18)	ND(0.18)	ND(0.18)	ND(0.18)	ND(0.18)	ND(0.18)	ND(0.18
Nickel	ND(28)	ND(28)	ND(28)	ND(28)	ND(28)	ND(28)	ND(28)
Selenium	[1.3]	[1.0]/ [0.25]	ND(1.7)	ND(1.7)	ND[3.3]	ND(1.7)	ND(1.7)
Silver	ND(7.7)	ND(7.7)	ND(7.7)	ND(7.7)	ND(7.7)	ND(7.7)	ND(7.7)
Zinc	13,800	13,600/195	ND(20)	2,510	12,600	1.000	5,360
Volatile Organics (pr	ob)						
Methylene Chloride	ND(5)	7J/8J	11J	ND(5)	ND(50)	1.3	2J
Acetone	ND(10)	190/240	ND(100)	ND(10)	ND(100)	ND(10)	2J
To luene	2J	22J/ND	ND(50)	ND(5):	27J	ND(5)	ND(5)
Tetrach loroethy lene	2J	ND(25)	ND(50	ND(5)	ND(50)	ND(5)	ND(5)
Total xylenęs	94	780/460	1,300	ND(5)	46J	ND(5)	ND(5)
Ch lorobenzene	ND(5)	14J/ND	1,800	ND(5)	1,100	ND(5)	ND(5)
Ethylbenzene	27	540/ND	ND(50)	ND(5)	ND(50)	ND(5)	ND(5)
1.2-Dichloroethylene	ND(5)	ND(25)	ND(50)	ND(5)	210	ND(5)	ND(5)
Vinyl chloride	ND(10)	ND(50)	ND(100)	ND(10)	66J	ND(10)	ND(10)
Benzene	ND(5)	ND(25) .	24J	ND(5)	ND(50)	ND(5)	ND(5)
Semivolatile Organics	s (ppb)	- <del>- ,</del>		<del></del>			
2,4-Dimethylphenol	ND(10)	ND(50)	21	ND(10)	ND(10) .	ND(10)	ND(10)
1,2-0ichlorobenzene	10	ND(50)	ND(10)	ND(10)	230	ND(10)	ND(10)
1,4-Dichlorobenzene	ND(10)	ND(50)	ND(10)	ND(10)	24	ND(10)	ND(10)
2-Chlorophenol	ND(10)	ND(50)	13	ND(10)	29	ND(10)	ND(10)
Pheno 1	ND(10) 2	2,000/2,400	25	ND(10)	ND(10)	ND(10)	ND(10)
Fluoranthene	ND(10)	ND(50)	· ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Pyrene	ND(10)	NĎ(50)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)

(CONTINUED)

# . TABLE 19 GROUND WATER SAMPLING RESULTS^a CIBA-GEIGY SAMPLING VISIT June 11, 1987 (Continued)

				Sample Numbe	rs		
	. GWI	GW2/2A	GW3	GW4	GW5	GW6	GW8
Semivolatile Organics	(ppb) (cor	tinued) ·					
Butylbenzylphthalate Bis(2-ethylhexyl)	ND(10)	ND(50)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10
phtha late	ND(10)	ND(50)	ND(10)	. 24	15	ND(10)	ND(10
4-Chloroaniline	ND(10)	ND(50)	130	ND(10)	ND(10)	ND(10)	ND(10
		ND(50)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10

ND( ) - Compound not detected at level indicated

- B Compound was detected in the QC blank
- J Presence of compound detected, value estimated.
- [] Result is a value greater than or equal to instrument detection limit, but less than contract required detection limit.

^aResults are a compilation of the reported analytical data. HSL analytical parameters which do no appear in this table were not detected by the respective contract laboratories. Metals analyses were performed by Cambridge Analytical Associates, Boston, Massachusetts on 7/20/87. Organic analyses were performed by ETC-Toxicon, Baton Rouge, Louisana, as reported on 7/31/87.

^bDuplicate analysis.

Levels of arsenic were found to exceed the maximum contaminant level (MCL) of 50 ppb pursuant to 40 CFR Parts 141 and 146 in GW2/2A and GW5. The MCL for lead (50 ppb) was exceeded in GW4 and GW5. Secondary EPA water quality criteria for manganese (50 ppb) and zinc (5,000 ppb) were exceeded in GW1, GS2/2A, GW4 (manganese only), and GW5. Although ground water in the vicinity of Ciba-Geigy is not used as a domestic source, drinking water standards are used for comparison to establish potential threats. Due to the dispersion of metals in the ground water throughout the production area, it was not possible to define a particular source for these contaminants.

Toluene (2 ppb), tetrachlorethylene (2 ppb), total xylenes (94 ppb), ethylbenzene (27 ppb), and 1,2-dichlorobenzene (10 ppb) were all detected in the ground water sample (GW1) collected near SWMU 11 (former toluene release). Tetrachlorethylene levels, although estimated, exceeded the EPA secondary Clean Water Act drinking water criteria of 0.88 ppb and the proposed recommended maximum contaminant level (RMCL) of zero. Significantly higher levels of these compounds (except tetrachloroethylene and dichlorobenzene) including methylene chloride (8 ppb), acetone (240 ppb), chlorobenzene (14 ppb), and phenol (2,400 ppb) were found in another upgradient production area ground-water pipe (GW2). The third upgradient location sampled (GW4) showed the presence of bis(2-ethylhexyl)phthalate (24 ppb) only, which is consistent with the fact that Ciba-Geigy has reworked this area (location of former underground storage tanks) and removed any potential source for (solvent) contamination.

The highest levels of toluene (27 ppb), total xylenes (1,300 ppb), chlorobenzene (1,800 ppb), 1,2-dichloroethylene (210 ppb), vinyl chloride (66 ppb), 2,4-dimethyl phenol (21 ppb), 1,2-dichlorobenzene (230 ppb), 1,4-dichlorobenzene (24 ppb), and 2-chlorophenol (29 ppb) were found in the two downgradient pipe locations (GW3, GW5) adjacent to the Pawtuxet River. Xylenes were found to exceed the 10-day health advisory level (HAL) of 200 ppb based on Safe Drinking Water Act criteria for the

prevention of human health risks due to ingestion of contaminated water. Chlorobenzene and 1,2-dichloroethylene were found to exceed the proposed RMCLs of 60 ppb and 70 ppb respectively. Vinyl chloride, although an estimated value, was also found to exceed the proposed RMCL of zero and the proposed MCL of 1.0 ppb.

The higher concentration of organic contaminants near the river potentially indicates pollutant migration towards this outlet. As with inorganic compounds, however, the dispersion of organics in the ground water throughout the production area indicates more than one source. Versar believes that the inorganic and organic levels encountered represent significant releases to the environment which should be further investigated to define the extent of contamination and determine the need for remedial measures.

#### 7.0 CONCLUSIONS AND RECOMMENDATIONS

During the preliminary review and visual site inspection, 11 solid waste management units and 5 areas of concern at the former Ciba-Geigy chemical manufacturing plant were identified through document review, personal interviews and the collection of onsite information. Very little information has been developed by Ciba-Geigy for many of these units and areas. Analytical data to support the evidence of release and identify potential releases were provided as a result of conducting a sampling visit at the Ciba-Geigy facility. Overall, the information obtained revealed that Ciba-Geigy has a history of releases to air, soil, surface water, and ground-water media. The subsequent effects of these releases to human health and the environment has not been fully documented however.

The most recent information generated regarding releases from the facility has been the identification of inorganic and organic contaminants in the ground water beneath the former production area. It may be difficult to ascertain whether these releases were contributed to by SWMUs in the area, but there is some indication that SWMUs have contributed to subsurface contamination. Subsurface soils downgradient of the former main tank farm (SWMU 2 and SWMU 3) were found to contain elevated levels of PCBs. SWMU 11, former Building 11, was identified as the location of a toluene release. Additionally other areas were contaminants may have been introduced include the under ground tank farm, process sewer lines, and process buildings.

According to EPA, Section 3008(h) of RCRA indicates that the United States Congress did not intend to limit EPA's authority by implementing corrective action for releases from discernible units only. Unlike Section 3004(u) (continuing releases from permitted facilities), Section 3008(h) broadly authorizes corrective action for any release into the environment from a "facility" authorized to operate under Section 3005(e) (interim status). It does not require the Agency to find that a release of hazardous waste or hazardous constituents originated in a discernible solid waste management unit.

Versar concludes that the presence of contaminants in the ground water can be considered a release containing hazardous constituents and that Section 3008(h) authority is applicable to site releases from units that may not be SWMUs. Additionally, other releases to the subsurface, such as PCB contaminated soils, would likewise be subject to Section 3008(h) authority.

Releases to the air and surface water from Ciba-Geigy have been documented throughout the plant's history. Analytical information regarding air releases have been provided by RIDEM. The data indicates that previous air emissions have not resulted in widespread contamination surrounding Ciba-Geigy nor do the levels encountered represent a significant health risk. The potential for continuing releases to the air seems to be negligible at this point, especially since the facility ceased operations over one year ago.

Releases to the Pawtuxet River from Ciba-Geigy are probably the most difficult to track. The steady flow of the river quickly takes surface discharges or releases downstream. Although hazardous constituents associated with former chemical manufacturing processes at Ciba-Geigy have been identified in the river water and sediments, it has not been possible to identify a particular source for these contaminants. There currently appears to be potential for continuing releases to the river from Ciba-Geigy. The ground water beneath the former production area contributes to the river flow and has been shown to be contaminated. Also there are areas of the site, including the wastewater pipeline breaks, where no information has been provided regarding potential surface runoff contamination. The potential for exposure to hazardous constituents should be expected to be highest via the surface water migration pathway.

SWMUs for which little information exists and which should be considered for the potential of continuing release include the following:

SWMU 7 - Chlorosulfonic Acid Spill Area

SWMU 8 - Potassium Ferrocyanide Spill Area

SWMU 9 - Wastewater Pipeline Break (January 12, 1982)

SWMU 10 - Wastewater Pipeline Break (September 7, 1983)

Additionally, units that have been investigated which require further study include the following:

SWMU 2 - 6,000-gallon Hazardous Waste Storage Tank SWMU 3 - 7,500-gallon 90-day Accumulation Tank SWMU 5 - Former Silt Pile SWMU 11 - Building 11 Area

SWMU 2, SWMU 3, and SWMU 11 should all be included in a comprehensive investigation of the former production area of the facility. As a result of the PR, VSI, and SV of the Ciba-Geigy facility and guidance from EPA Region I, Versar recommends that a RCRA facility investigation (RFI) should be initiated to address all of the problem areas discussed in the final RFA report.

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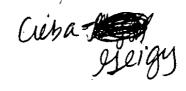
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- U.S. EPA. 1984. Memorandum from Michael O'Brien, Environmental Engineer, CT/RI Waste Programs Section, to Richard Boynton, Chief, CT/RI Waste Programs Section, regarding RCRA Industrial Survey Report Ciba-Geigy Corporation. July 23, 1984.
- U.S. EPA. 1985. July 1985 Revision. Statement of Work for Inorganic Analysis Multi-media, Multi-concentration. U.S. EPA Contract Laboratory Program, Office of Emergency and Remedial Respose, Washington D.C.
- U.S. EPA. 1986. Preliminary Assessment, Ciba-Geigy Corporation from Paula Lia, Chemical Engineer, CT Waste Regulation Section, to Gerald Levy, Chief, NH/RI/VT Waste Regulation Section. April 1986.
- U.S. EPA. 1986a. Site Inspection Report, Solid Waste Management Unit Analysis, Ciba-Geigy Corp., Cranston, Rhode Island, from Paula Lia, Chemical Engineer, CT Waste Regulation Section, to Gerald Levy, Chief, NH/RI/VT Waste Regulation Section. April 1986.
- U.S. EPA. 1986b. Statement of Work for Organic Analysis Multi-media Multi-concentration. U.S. EPA Contract Laboratory Program, Office of Emergency and Remedial Response, Washington, D.C. October 1986.

### ATTACHMENT A

ANALYTICAL RESULTS FOR SAMPLES COLLECTED DURING SAMPLING VISIT AT CIBA-GEIGY, CRANSTON, RHODE ISLAND June 11-12, 1987

TABLE A SAMPLE IDENTIFICATION

Versar Field Sample I.D.	EPA Identification	Analytical Parameters
GW8, ground water	AH 641, MAD 062	VOA, B/N/A, Metals
SS3, surface soil	AH 642, MAD 062	Full HSL
GW6, ground water	AH 643, MAD 063	VOA, B/N/A, Metals
GW4, ground water	AH 644, MAD 064	Full HSL
EB1, equipment blank	AH 645, MAD 065	Full HSL
	- AH 646, MAD 066	Full HSL
GW3, ground water	AH 647, MAD 067	Full HSL
GW5, ground water	AH 648, MAD 068	Full HSL
GW3, ground water	AH 649, MAD 069	Full HSL
SS2, subsurface soil-	AH 650	VOA, B/N/A, Pest/PCB
GW2A, ground water	AH 651, MAD 070	Full HSL
GW1, ground water	AH 652, MAD 149	Full HSL
BG1, background		
surface soil	AH 653, MAD 150	Full HSL
SSIA, subsurface soil	AH 654	VOA, B/N/A, Pest/PCB
SS1, subsurface soil	AH 655	VOA, B/N/A, Pest/PCB
SD4, sediment	AH 656, MAD 153,	Full HSL,
	3020A-02	TCDD, TCDF
SD2, sediment	AH 657, MAD 151	Full HSL
SD1, sediment	AH 658, MAD 152	Full HSL
	3020A-02	TCDD, TCDF





Date Reported: July 9, 1987

Cal ID'S: S9688-S9689 Cal Ticket No.: 3020A-1 Date Received: 6/15/87

SAS 3020A

Mr. Edward Taylor USEPA Region I Environmental Services Division 60 Westview Street Lexington, MA 02173

Dear Mr. Taylor:

Enclosed are data summaries and documentation for samples comprising SAS 3020A received June 15, 1987. The soil samples were logged in under ENSECO-Cal Lab numbers S9688 thru S9689. The samples were analyzed for 2,3,7,8-TCDF and 2,3,7,8-TCDD. The cross correlation of ID numbers is shown below:

CAL ID	EPA ID	<u>!</u>
	and the second s	
S9688	3020A-0	1
S9689	3020A-0	2

Sample 3020A-01 was analyzed as a sample, native spike, and native spike duplicate.

We encountered no problems with the analysis of these samples.

If you should have any question, please don't hesitate to give us a call.

Sincerely,

Michael W. Orbanosky Director GC/MS Services GC/MS Lab supervisor

cc: SMO

File

#### 2378-TCDF & TCDD DATA REPORT ENSECO-CaL Lab 2544 Industrial Blvd. W. Sacramento, CA 95691

Lab: ENSECO-Cal Lab Case No. 3020A Batch/Shipment No.

Report Date:

Column: SP-2331

TCDF DATA

Cal Labs ID		Aliquot C Wet Wt. U (grams)	PPB TCDF Meas	PPB TCDF Det. Lmt	Ins IC		Time	304/ 306	316/ 318	304	306	316	318	Comments
S9688MB	METHOD BLANK Y	10.00	ND	0.077	5	06/29/87	21:19:00	-	0.77	-	-	80820	104872	
S9688	3020A-01 Y	10.25	ND	0.034	5	06/29/87	22:10:00	•	0.80	•	•	188832	236992	•
S9688NS	3020A-01NS Y	10.46	0.88	•	5	06/29/87	22:33:00	0.73	0.79	58324	80045	151814	191582 9	2% Recovery
S9688NSDUP	3020A-01NSDUPY	10.64	0.94	-	5	06/29/87	22:59:00	0.73	0.81	45276	61985	109916	135832 1	01% Recovery
s9689	3020A-02	10.58	-	0.078	5	06/29/87	23:22:00	-	0.78	•	-	83434	106626	•

TCDD	DATA
------	------

Cal Labs . ID	Sample Number	C	Aliquot Wet Wt. (grams)	PPB TCDD Meas	PP8 TCDD Det. Lmt	Inst ID	Date	Time	320/ 322	332/ 334		Surrg X Acc'c	320	322	257	328*	332	334	Comments
\$9688MB	METHOD BLANK	Y	10.00	ND	0.067	5	06/29/87		•	0.76	1.0	101	-	•	-	59348	57496	75440	
S9688	3020A-01	Υ	10.25	ND	0.023	5	06/29/87	22:10:00	-	0.79	0.97	99	•	-	-	139116	140009	176157	
S9688NS	3020A-01NS	Y	10.46	0.72	-	5	06/29/87	22:33:00	0.73	0.78	0.94	98	35070	48082	13332	119055	119240	153181 7	6% Recovery
S9688NSDUF	3020A-01NSDUP	Y	10.64	0.81	•	5	06/29/87	22:59:00	0.75	0.76	0.95	101	30600	40544	11408	92015	88572	116086 8	6% Recovery
<b>\$9689</b>	3020A-02	Y	10.58	ND	0.083	5	06/29/87	23:22:00	•	0.76	0.94	99	• .	-	-	55626	54796	71804	

MB = Method Blank

FB = Field Blank

P = Partial Scan/Confirmatory Analysis

ND = Not Detected

DL = Detection Limit

NS = Native TCDD Spike D = Duplicate/Fortified Field Blank

-RX = Re-extraction

RI = Re-injection

MPC = Maximum Possible Concentration

CU = Clean Up

*Corrected for contribution by native TCDD; 0.9% of m/z 322 subtracted

Prepared by: Approved by:



### Cambridge Analytical Associates

1106 Commonwealth Avenue / Boston, Massachusetts 02215 / (617) 232-2207



July 20, 1987

Mrs. Linda Boynton
U.S. Environmental Protection Agency
Contract Laboratory Program
Sample Management Office (SMO)
P. O. Box 818
Alexandria, VA 22313

Dear Linda:

Enclosed is the sample data package for Case 7410 received by Cambridge Analytical Associates under Contract Number 68-01-7315 (Inorganics Analysis). Samples were received on June 16, 1987 and analyzed under QC number 8706182.

I apologize for the delay in forwarding this package to you. Please call if you have any questions.

Sincerely,

Gran M Jacavas

Joan M. Lacava Inorganic Chemistry Laboratory Sample Custodian and Data Manager

**Enclosure** 

. S. SAA Contract Laboratory Program ample hanagement Office . O. Box Sib - Alexandria, VA 22313 . 237557-2498 STS: 8-357-2498

Date: 27/22/87

#### <u> 19758-1832</u> <u>1838-1816-1828 - INDRESNIC SANGER</u>

at Name: CA4BRIDge Analytical Associates GW No. 785 ab Receipt Date 36/16/67

2786180-89

5705182-10

Dase No. Case 7410 D.D. Report No. 8706183

#### <u>Sacrle_Nussers</u>

<u> 961057</u>	<u> Lab. 18186.</u>	2297837	Far 15 Nor
48 <b>8</b> 82	872:182- <b>2:</b>	NAD 152	8786182-11
AD BET	8785181-22	MAD 265	57 <b>2</b> €182-12
AD 254	8701182-03	MAD 151	8724192-13
49 <b>0</b> 45	9726182-24	MAD 152	8725192-16
AD <b>0</b> 57	9726182-25	MAD 153	8706182-15
AD 245	8738182- <b>2</b> 8		
AD 259	8706182-37		
AD 272	8725182-09		

2025Si

AL 145

88 **25**1

18P Interelement and cackground corrections applied? Yes _____ No ____.

If yes, corrections applied before _____ or after ____ yeseration of new data.
Footnotes:

NR - not required by contract at this time .

Porm I:

velue - If the result is a value greater than or equal to the instrument betection limit but less than the contract required datection limit, report the value in brackets (i.e., 1983). Indicate the analytical method used with P (for ICP), A (for Flame AA) or P (for furnate AA).

- Indicates elevent was analyzed for but not setacted. Report with the detection limit value (e.g., 100).
- E - Indicates a value estimated on not reported due to the presence of intertarence. Exclanatory note included on cover page.
- indicates value determined by Mathed of Standard Addition.
  - Indicates spika sample recovery is not within coming. limita.
- - Indicates duplicate analysis is act within control limits.
- + 1 Indicates the correlation coefficient for method of standard audition is Ness than 8.79%
- M Indicates duclicate injection results exceeded control limits.

Indicate method used: F for NOP; A for Flame AA and F for Furnace.

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. 3. SPA Contract Laboratory Program arple Memagement Sffice .5. Box 818 - Alexandria, VA 22313 23/557-2490 975: 8-557-2490

(EPA Sample No.) | MAD Ba2

Date: 07/20/87

### INGREANIS AMALYBIS DATA BHEET

Al NAME: CAMBRIdge Analytical Associates

DASE MO. Case 741%

89 NG.: 785

AS SAMPLE ID. NO.: 8724162-81

de Report No. 8786182

#### Elements Identified and Heasured

= 1.	restration: Tix: Water	<b>ا</b> ر الحال ا:56   الآر		 		ium Doher	
				92	) [ = ==		
1	Aluniaum	121	Ξ.	13	สลธายราชส		<b>3</b>
2	Antimony	53 SQ	F	1.4	ដាំងពឲ្យពេខគម	18	ş.
3	Arsenio	2.68.	F	15	Marcury	2.198	
4	Barium	3 <b>0</b> 0	F	18	MICKEL	283	₹-
Ę	3eryllium	2.19	Ξ.	17	Poteseius	11,7203	F·
ä	Sedmium	4.70	÷	15	Selenium	1.78	F
7	Calcius	15,780	F	:5	Silver	7.79	ت
ਤ	Chrimiu	9 41	F	24	Smátum	11,700	۶·
5	Cobalt	385	Ë	21	Thallion	4.20	F
Ÿ	Capper	150	₹.	22	Vacadium	, 23e	<b>F</b>
1	lran	443	Ę.	23	Zinc	5,340 .	$\overline{\mathcal{E}}^{i}$
2	Lead	5.18	٤	$\mathbb{Z}^{\mathcal{L}}$			

yanida **4%** 

· Percent solids (%)

econotes: For reporting results to EPA, standard result qualifiere and used, as defined on Edver Page. Additional flags on fibitoties swellaining results are encouraged. Definition of such flags aust be explicit and contained on Cover Page, however.

Jacente:

Let Managar . Gran M facsura

S. ERA Johnson Laboratory Program

kmole davagedest Gaaice

või Box Eif + Alexanoria, VA 12310

13/857-2492 PTS: 5-857-2492

TEFG Bample No.!
| MAD Bed | |

Date: 87/20/57

#### INDREADIC ANALYSIS DATA SHEET

/B NAME: CAMBRIdge Analytics: Associates

- DASE NO. - Case 7413

#sdika

5g No.: 7a5

AB BAMPLE 10. NO.: 8706182-02

SE REFERT NO. 6785182

Eleasate Identified and Passured

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•				<u>u</u> a/	, <u>.</u>	-	
	Alusinus	2,422	ĩ	13	កុីឧហូលខ្ទះបំបង	13.482	F /
2	entisory	58Uh	F		ហ៊ុំងក់ខ្លួនស្តុខខ	3,478	p. 1
	Arssaic	E4.31	=		Mercury	0.138	
	Barium	£577	<u>\$</u> .	14	Hickel	286	P
::	227711113	d	Ē	17	Potassina	18,328	2-
_	Jada: yn	4.79		:3	Selenium	1.78	=
	Caltiuf	្ 48,623	2	1 7	Bilver	7.78	ē
<u>_</u>	Ghramium	구. 살던	ř	22	ទីជាជន់បាន	15,588	<u></u> .
٤.	Cot ≥l t	359		Ξi	Thailtea	4,20	F
	Copper	:88	Ē.	2.2	Varatium	233	F.
	īrch	ଅଟ୍ଟେଥ		23	Zinc	1,070	E.
1	1883	17.73	Ë	2.4		•	

ranida 🆊

Percent solids (%)

potables: For republing results to EPA, standard result qualifiers are used as defined on Sover Fade. Additional flags or focunotes explaining results are encouraged. Definition of euch flags must be explicit and upstained on Sover Page, nowever.

naence:

LED MERESET Gran M. Jacava

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#### Pona I D

. 8. EAA Joutneot Laboratory Arcgress exple Menagement Office .0. 85% 815 - A.emandria, VA 22313 30/557-2475 FTE: 5-557-2490 TEFA Sample Ro. ( | MAD Ze4 | )

Date: 27/18/87

INDREAMIC AMALYBIS DATA ENBET!"

AB MAME: CAMPAIdge Analytical Associates

DASE NO. Dase 7410

6k W6.: 783

AB SAMPLE 13. NO.: 6784192-81

@C REPORT NO. 8785182

#### Elemente Identified and Maasured,

27	zentration:	Lew <b>X</b>	, 		ಗeα	iam	
āt:	ring Water				Bitige	Other .	
				동글:	s: C. <del>m.</del>		
. 1	Aluaisua	1,418	P	13	Magnesium	14,2423	F.
2	Antispay	. 56L.	ţ.	<u>. 4</u>	Mangare's≝	54	F
<u> </u>	Arsenio	2.88	F	15	Mencury	Ø.18U	
4	Barida	360	5	1.4	Nickel	298	7
ā	ber.llius	2.18	Ţ.	1.7	Fotassium	13,8:23	F·
<u> </u>	Cadhida	4.7%	<del>.</del>	15	Salenium	1.79	۶.
7	Salcium	19,788	Ē,	1 2	Stiver	7.78	F
5	Obromian	( 5	Ē	2.7	201103	19,20€	F'
ş	Debalt	388	Ē	21	Inullias	4.74	;
<del>.</del>	Segger	150	5	22	Vanelium	259	Ė.
<u>:</u>	la sa	4,132	F	23	Zint	2,513	₽
2	teat	173		24			

yanice NP

Percent solids (%)

uproptes: For reporting results to EPA, standard result qualifiers are used as defined or Cover Regs. Additional flage on footnotes explaining results are encouraged. Certaition of such flage nust be explicit and dontained on Cover Page, nowever.

amogata.

Las Manager GranM. Lacava

#### Fora i B

. S. EPA Contract Laboratory Program escie Management Daffice

.5. Boy Ele - Alexandria, VA 22313

33/387-2498 FTS: 5-557-2498

HEPA Seacle Novi MAD 23E

Date: 27/20/87

INCREANIC ANALYBIS DATA SHEET

AB MAKEr CAMERIdge Analytical Associates

CASE NO. Dasa 7410

DW MG. 2 785

AE SAMPLE ID. NO.: 5786180-24

05 REPORT NO. 8785182

#### Elements identified and heasured

	rentration:	/ Low			ក្នុង វ		
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				¥ 3 4	/ _ - <del>2</del> 4		
1	Alumiaua	1436	Ę:	13	Magnesium	1178	<b>3</b> .
2	Antimony	5818	F	1 .	Manganesa	5.55	F
3	Arsenic	2.58	F	15	Meriury	<b>2.</b> 15U	
4	Barius	7 <u>8</u> 1	2	_ T	Nickel	230	<b>F</b> -
3	Baryllion	1.20	Ë	1.7	Potaesium	[653]	P
έ	Catainn	4,79	Ę.,	1.5	Selenius	1.70	ř
. ,7	Calcius	. 6292	Ξ	19	Silver	7.78	₹.
ĕ	Chromius	9,4일	<del>,</del> =	22	Baciun	1,2528	Ē
7	Babalt	ซลน	ř	2.1	Thallies	4.25	F
14	Sasper	188	5	22	Vanediam	234	F
1	Irsa	459	ŗ.	23	Zirc	223	<del>F</del>
2	Lead	1.75	Ĺ	124			

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Parcent solids: (%)

potactise: For reporting results to EAA, standard result qualifiers are used as cofined on Cover Page. Adoitional flags or focusetes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

odderts:

LAD Manager Gran M Jacawa

, 6. EPP Contract Laboratory Progress

apple Menagement Office

.S. Box 318 - Alexandria, VA 203:3

TEPA Eample Mo. 1 1 MAD ZEZ

Date: 27/20/87

INGRESMIT AWALYETS DATA SHEEV

AB MAYE: CAMERICGE Analytical Associates

DASE NO. Case 7418

OW NO.: 785

43 SAMPLE ID: No.: 8708192-25

GO REPORT NO. 8786182

#### Elements itentified and Measwred

28.1	entration:	Low X			Medi	ius	
atr	ik: Water				Sidage	อิโกลก	
				- <u>4</u> 1:	<u>/ :</u>		
1	Alemiaus	1430	F	13	hagnesius.	1178	÷
2	Retiase	EEUN	Ē	14	wangenes <b>s</b>	8.5E	£
3	Arsenia	1 68.13	E	15	Mercury	요. 1동년	
4	Barium	11871	77	14	Nickel	250	P
5	Beryllica	2.15	F'	1.7	Pateseium	5345	<b>-</b>
4	Cassius	4.70	Ë	15	Baleaiun	1.70	F
7	Salcium	6290	F	15	Silver	7.71	Ĵ
Ē	Shramius	9.43	£.	<b>2</b> 3	Bosiun	1,6500	ş
9	lobalt	.386	7	21	Inallium	4.28	F
Ü	Dosper	132	۶	2.2	Vanadium	231	ž,
:	Iraz	45.5	;	23	Zito	210	ŕ
2	ueai	1.748	Ë	24			

YEALSE NE

Rendent splide (%)

notables: For reporting results to EPA, standard resplit qualifiers are used as defined on Cover Page. Administrate of Such fings must be explaining results are encouraged. Deviation of such fings must be explicit and contained on Cover Page, however.

case ite:

Lac Manager GranMfacawa

. 5. EFA Contract Laboratory Program amble Management Office .6. Box BiB ~ Alexandria. VA 22313 03/557-2492 FTS: 8-557-2498

vEPA Sample No.i MAD ซีเอี

Data: 27/28/87

#### - INDREAMIL ANALYSIS DATA SHEET

. AB NAME: CAMERIdge Analytical Associates GW NO.: 785

EASE NG. Casa 7412

AB SAMPLE TO. NO.: 5726182-26

85 REPORT NO. 8786182

### Elementa Identified and Messures

	entration:		×		ಚಕ≟		
5 - 1	rik: Waler _	% 5±11				Other _	
				¥9.	<u> </u>		
	7.2		_	,		<b>-</b>	-
1 ~	Aluminum		5		ក្នុងខុខនគរ ព័ <u>ឃ</u>	5,743	
2	Antimony	5831		<u>:</u> 4	Manganese	93 <b>8</b>	ř.
3	Arsenic 🐠	2011 @ <del> 275</del> :	<b>列5</b> =	15	Mercury	Z.18U	
4	Bariuc	242	Ξ.	1 ±	Nickel	결혼인	?
5	Berviliem	2.10	P	17	Patassium	5,262	<b>:</b>
Ţ.	Caimium	4.78	Ę.	13	Selenius	£3.51	F
• 7	Selcium	37.903	Ę	: 5	211785	7.78	₽
Ξ	Sarcaiya	21	<del>2</del> )	23	Sodium	53,020	F
÷	Sobalt	385	₽	21	Thallica	4.25	-
3	Copper	54		22	Vanabium	[41]	F
ī	Iroa	35,238	2	2.3	Zinc	12,502	<u> </u>
2	Lead	73	F	24		•	

yanidanp

Percent solids (%)

potnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or toothobes explaining results are encouraged. Definition of such flage much be exclicit and contained on Cover Page, hewever.

ammente:

Lat Manager Goun M Loccova

. B. EPA Esatraci Laboratory Program ancle Management Effice .5. Box 818 - Alexandría, VA 22313 83/887-2498 FTE: 8-87-2490

GERA Sample No.: : MAD 259 :

Date: 07/20/37

INGREANIC ÁNALYBIS DATA SPEET

AB NAME: CAMBRIdge Analytical Associated LASE NO. Case 7418

0w1N0.1 798

AB SAMPLE ID. NO.: 5706151-87

go Report No. 6706160

#### Elements Identified and Measured

ientrationi	Low <b>X</b>			រាំខ្មែរ	ile	
rin: Water	X Scil	·		. Bitāga LLL.	Giher .	<b></b> -
			-			
			56	<u> </u>		
Aluminum	8,542	ē	15	Maghasium	12,8223	<b>5</b>
Antimony	. 590N	F	1.4	Menganesa	593	ŗ
Arsenic	409 ÷€ 1,20	51 -	15	Mercury	0.158	
Barium	[48]	F	16	Mickel	280	P
Laryllius	2.10	Ē	1.7	Potaesius	[1,520]	F
Caimium	4.70	٠.٥	18	Selenium	[1.2]	-
Salcium	9,818	Ξ	17	Silver	7.7b	<u>.</u>
Shramium	· . : 5	Ę	28	Bodium '	144,630	۶
Sobalt	388	F	20	Inelliam	4.25	<del>.</del>
Copper	ää	۶	22	Vanadina	5471	21
Iran	3,153	, E	1:3	Ziri	13,620	F
Lead	1.7	=	2.4			
	Aluminum Antimony Antimony Arsenic Barium Caimium Calmium Chromium Cobalt Cooper	Aluminum B,542 Antimony B5511 Antimony B5500 Antimony B67120 Barium C481 Cadmium A.70 Cadmium P,008 Chromium C581 Cobalt C500000 C5	Aluminum 3,542 P Antimony SSUN F Antimony SSUN F Arsenic (09) 1-70 1,2461 P Barium 2.10 P Cadmium 4.70 P Calcium P,008 P Chromium P,008 P Chromium SSUN F Cobalt SSU F Cobort SSU	### ### ### ### ######################	Aluminum B.540 P.13 Maghasium Antimony BSSN F.14 Manganasa Arsanio (09.43)1,2061 P.16 Manganasa Barium Barium B.481 P.16 Mickel Baryllium 2.10 P.17 Potassium Cadmium 4.70 P.18 Selenium Calcium P.600 P.17 Bilver Chromium P.600 P.20 Bodium Cobalt BBD P.20 Bodium Cobalt BBD P.20 Toallium Cobalt BBD P.20 Vanadium Iron 8.288 P.20 Vanadium Iron 8.288 P.20 Vanadium	### ### ### ### ### ##################

#### vanida MR

#### Percent solids (%)

octastas: For reporting results to EFA, standard result qualifiers are used t as defined on Jover Page, Additional flags or footnotes explaining results are an operaged. Definition of such flags must be explicit and contained on Idver Rege, nowever,

idments:

Lac Manager Granm focava

. S. EFA Contract Laboratory Program emple Management Office .C. Son Sid + Alexandria, VA 22313 ps/683-2498 FTS: 9-887-2498

|EPA Semple No. | | MAD 272 (

Date: 87/20/87

#### INDREAMIC ANALYSIS DATA SHEET

AS NAME: CAMBRIdge Analytical Associates

- 5455 No. - Case 7418

ä% N∃.: 785

AB SAMPLE ID. NO.: 9786182-28

GS REPORT NO. 8786182

#### Elements Identified and measured

253	entration:	Low	_ <b>_</b> _		· des	diam	
e tir	rix: Water _	X Scil			&iudge	Other .	
				<u>u</u> a:	<u> </u>		
1	Aluminus	3,370	F	13	Nagnesium	[1,642]	۶
2	éstiacsy	Eaux		14	hanganesa	177	₽
3	Arsenic	7:20:57 - 36:5	· F	15	Mercury	Ø.1∃U	
4	Barius	3⊉u	Ė,	16	Nickel	259	Ę
5	Bervilium	2.10	۴	17	Potassium	D1,3501	F.
Þ	Cadmium	4,79	F	18	Selenium	[ <b>3</b> .26]	F
7	Salcius	12,620	F	성후	Silver	7.78	F
Ξ	Shrgaium	9.40	F	20	Sadium	. 144.222	5,
<del>-</del>	Cabalt	388	÷	21	Thallium	4.25	F
Ţ.	Spager	[21]	P	22	Vanadium	1 1271	P
1	iras	2.853	F	23	1155	19E	P
-	Lead	1.785	Ŧ	24		•	

### yanide Nº

Percent solids (%)

cotnotes: For regarding mesults to EFA, standard result qualifiers are used as defined on Dover Page. Additional flags or factnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

pasen1e:

00010

Lab Manager Gran M Lacowa

. S. EAA Contract Laboratory Program ample Management Office

.8. Box BiB - Alexandria, VA 22318 03/557-2490 FTB: 37-557-2490

TEFA Bamble No. 1 1 MAD 149 :

Date: 27/20/87

#### INCREANIC AMALYSIS DATA SHEET

AB: NAME: CAMBRIdge Analytical Associates CASE NO. Case 7410

0k M0.: 785

AB SAMPLE 1D. NO.: 8786182-29

25 REPORT NO. 9786182

#### Elements identified and measured

9.7	centration:	LCW			ha	editon.		
āŧ	rik: Water _	X Esil			_ Sludge		_ Sther	
				<u>ug</u> ,	<u>/</u> L			
1	ลิโจตร์สนธ	01433	Ę.	13	Magnesium	[	3,1601	F'
2	· Antiophy	58 <b>0</b> %	5	14	Manganess		1,060	Ē
3	Arsenic	2.80	Ē	15	Mercury		<b>0.</b> 186	
4	Barium	E 4 3 3	۶	lò	Nickel		288	F
5	Beryllius	Z.iu	ř	17	Fotassius		11,8881	۶
5	Cadmium	4.70	ŗ.	រដ	Saleaida		61.23	F
7	Calcium	34,720	Þ	19	Silver		7.75	P
Ē	Chrimium	9.48	Ę.	22	Socium	1	18.332	F
7	Cotalo	388	F	<b>1</b>	Thallium	(	4.28	F
$\bar{z}$	Capper	160	Ē	22	vanadium	١	238	F
4	Iron	3,200	P	23	Zinc	1	13,820	F
2	Lead	::.71	F	24			•	

### yanidewk

#### Percent solids (%)

optrotes: For reporting results to EFA, standard result qualifiers are used as defined on Cover Page, Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, bowever.

pagents:

Las Managar Gran M Lacava

. S. SPA Contract Laboratory Program emple Management Office .O. Ber Bis - Alexandria, VA 22313 23/557-2492 FTS: 89557-2490

HEPA Bamble No.1 . MAD 261 )

Date: 87/28/87

#### INDREANIC ANALYSIS DATA SHEET

AB MAKE: CAMBRIdge Analytical Associates

CASE NO. Dase 7418

OW MOL: 785

AB BAMPLE ID. NO.: 8705182-10

QC REPORT NO. 8706182

#### Elements Identified and Measured

25.0	entrationi	Law	<u></u> %_		he	sium	_
a tr	Th: Water	Bail		_ X	tie Slucae	Stner	
			65/	<u>kg_dr</u>	Y_weight		
		•					<b></b>
1	Aluminum	26,620		1.2	Magnesium	E.7 <b>∈2</b>	٢
2	Antinony	137N	-	14	កាំឱ៩ខ្€ឧ∈∈≘	571日	۴
3	Arsenio	1/20A7 @ === 31	F	15	Mercury	~ 7.80.67 <del> 5</del> € 3€	
4	Barium	622N	F	16	Nickel	258	F
5	Bervillius	2,29	÷	17	Potesaium	02,9283	Ę
ź	Dedalus	14	F	iξ	Seleniup	11.51	F
7	Salsium	5,440	۶	15	Silver	급기원실	÷
3	Shromium	407	F	20	Sadaun	1,8928	F
7	Cobalo	4.10	<del>-</del>	21	Trallium	4.40	F
Z	Cosper	5:2N	F	2.2	Vananium	: A : 2 2 2	۴
1	ໂຄ້ວິກ	:4,502	Ē	23	Zinc	11,1222	F -
3	Lead	5,2ER	F	24			

yanide

Percent solios (%) 19

potactes: For reporting results to EPA, standard result qualifiers are used as pefined on Cover Page, Additional riags or footnotes explaining results are encouraged. Bufinition of such flags must be explicit. and contained in Lever Page, however.

innacts:

00012

Les Manager Joan M Jacava

. B. EFA Contract Laboratory Program

amble Menagement Office

.d. Box BiB - Alexandria, VA 22313

83/551-2498 FTB: 8-557-2498

TEPA Secple No. | | MAD 153 |

Date: 87/28/97

#### INDREAMED ANALYSIS DATA BREET

HAB NAME: CAMERIdge Abalytical Associates

593E NO. | Ease 7410

1 0W MOL: 785

AP EAMPLE 10. NO.: 8704182-11

GC REPORT NO. 2784182

#### Elements lidentified and Messuret

incentrations		LawX			Magrus		
at	rix: Water	2011		_X	_ Sluige	Other _	
			 /	r Fr di	TYLWBight		
			291	C# 7 # ;	77.085905		
1	Aluminus	5,120	Ş	13	Magnesium	1,478	F
2	Antipopy	1 <del>4</del> %	۶,	14	danyanese	173N	Ę.
3	Arsenio	315 -1071266	1 /	15	Marcury	ارو کا المالا	
4	Parium	5403N	P	14	Nickel	[8,3]	ė
5	Bervllide	₫.498	7	17	Potassius	55333	F
5	Dadmium	1.2	F	18	Seleniua	ۯ.231	F
7	Salcius	2,718	۴	17	Silver	1.85	F
٠	Chromium	14	F	오랜	Seqies	2460	r.
7	Cocalt	두.12년	F	21	Thallium	2,788	=
Z	Secem	29N	F	22	Vanadium	32	P
1	Iren	13,482	Ŧ	23	Zinz	2325	ŗ.
2	Lesd	Z.40UEN	F	24		,	

yanida

Percent solids (%)

potnotes: For resorting results to EFA, standard result qualifiers are used as defined on Dovar Page. Additional flags on footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Dover Page, however.

onsents:

00013

Lab Manager _ Gram M Jacour

, S. EPA Cominati Laboratory Arograt ample Menagement Effice .C. Box 818 - Alexandria, VA - 22313 23/557-2492 FTS: 8-557-2492

IEPA Basole No. i MAD 358 14

Date: 37/20/87

#### INGREAMIC ANALYSIS DATA BREET

AS NAME: CAMBRIdge Analytical Associates OASE NO. Case 7410

3k MS.: 785

45 SAMPLE ID. NO.: 8786182-12

DO REPORT NO. S706182

#### Elements Identified and Measured

១១១	rentrations	LEN <b>K</b>				dium	~··
ŧ:	in: Water	Illing Soil		_X	. Sledge <u></u> .	Other	<b>-</b>
	•						
-			691	gald:	TYLKeight	,	
	Alusisae	3.44%	Ξ.	, , <u>,</u>	Machaeium	11.1031	F.
	Artimony	25%		14	hanganess	iech	E
	Arsenio	1:30:87 :5: (B)	Ē		Mercury	7,240 <del>5 , ; <u>5</u> (1)</del> 11	Ļ
	Barius	[18] T	7	1.5	Nickel	7.EU	Ē
	Baryllica	2,599	Ë	<b>i</b> 7	Potessium	15660	F·
	Cadorian	1.30	Ξ.	15	Belenium	[8.868]	F
	Calcium	12721	÷	χ÷	Ellver	2.18	F
	Ehromium	14	F	2 €	Esalus	2890	ت
	Otbalt	115	-	21	Toallion	1.25	=
	Jopper	168	<u>-</u> -	2.2	Vanadiúm	£7.51	F
	Iran	# X@# #\X@#	į.	23	Zinz	222	F
	Lead	178		24	•		
<u> 2</u> :	nide			P 2 :	cent solids	(%) 73	

councies. For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags on feetnotes explaining results are encouraged. Dafinition of such flags bust be explicit and contained on Cover Page, nowever.

omaents:

Let Manager Gran Machine 00014

. E. EPA Contrait Laboratory Prograd apple Management Office .d. Bax 815 - Alexandria, VA 22313 - 237587-2498 - FTE: Batta 7-2498 (EPA Eample No. ) MAD 151

Date: @7/22/27

#### INDROANIO ANALYSIE DATA SHEET

AB NAME: CAMBRIdge Analytical Associates

CASE NO. Dasa 7412

SW-NS.: 785

AB SAMPLE ID. NO.: 8726182-13

DO REPORT NO. 8724192

#### Elements Identified and heasured

oncentra	rtions	10 M	4	[	•	Mesila		· - · · ·
-atrix:	water:		Boil		Siuoșe		Other	

#### sq/Kq_dry_weight

	A1 :	. 13 755 B	÷	. <del></del>	W	5 5 5 <b>5</b>	-
1	Aluminum	11,302				_ 2,82 <b>0</b>	F
2	Antimony	32M	F	14	Margadeso .	3 <b>2</b> 2N	۶
7	Arsenic	GIU FEEDIG	ያ <b>ለ</b> ፍን 🖰	1 🗉	heroury 6131	0 2000	10 B
4	Barium	157N	<u>(</u> 2)	16	Nickel	150	ř
=	Beryllium	11.33	ï	17.	Fotassius	11,3501	Ţ.
ż	Sadmium	5.2	Ē	្ន	Eslanium	12.341E	F
7	Calciem ,	(2,050)	77	19	Bilver	4.00	۶
3	Chromium	312	F	22	Sodium -	5483	5
7	Cobalt	264	₽	21 -	Thallium - 🛫	2.28	F
2	Copaer	28 <b>0</b> H	F	22	Vanasium :	- 33	3
	inon .	19,202	F	23	7177	5255	7
Z	Leai	1858	Ē	24			
					· •		

Percent solids (%) 39 yanice

octnotes: For recorting results to EPA, standard result qualifiers are used as cefined on Cover Page. Additional flags or fournates explaining results and encouraged. Definition of such flags must be explicit and contained on Dover Page, newsysr.

uscents:

Lab Manager - Joan Macava 4-015

. S. ERA Contract Laboratory Progress ample Management Office .G. Edw BiE - Alemanifia. NA 228.8 83/857-2492 978: 8-857-2492

TEFA Sample No.: MAD 152

Data: 07/20/87

#### INCASANIC ARALYSIS DATA SHEET

Ab NAME: EAMERIdge Analytical Associates 1000011 985

- CASE NO. - Casa 7412

AB BAMPLE 1D. NO.: 6726182-14

de REPORT NO. 8704162

#### Elementa liantified and Massurei

	rentration)	Low	S	- <del></del> -		ina	
026	rix: Water	\$611		- h	_ Slodge	Grare .	
		• •	ms/	Saud:	Ivlaeisää		
<u>:</u>	Aluminus	B ( 201	ŗ.	13	Magnesius	E1,6223	į.
_	. Antimony	-4.5 gal	51	14	harqansas	521x	ř.
3	Arsenio	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	5} =	15	deniumy	10 = 5013	10:57
4	និង។ ដែល	1804	0	íè	Nichel	-33	7
=	Berylliet	(1,8)	<b>\$</b> **	17	Pareesius.	11,14₹1	F
:	Decaius	1 #	F	:₹	Esicalua	12.63	Ē
-	laltica	72,5783	E.	2 <del>P</del>	Silver	5,18	5
ij	นิสคองเนต :	7=	Ţ.,	26	Q = 40 com	7023	F
÷	152315	289	÷	21	Shalling	2.50	<del>.</del> =
Ē	Copper	7 2 1 12	Ê	22	vanadium	2291	F
÷	Irsa	19,500	۶	20	Tina	3872	F
2	1981	237.8%	F	24			
,1 € 3	ni <b>d</b> 8			ಕ್ರಾದ	cent salics ()	;) 32	

potrotes: For reporting results to EPA, standard result qualifiers and used as definat on Styer Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and corpsined on Orver Page, however.

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Lat Manager from M. facava (1)18.

. S. EPA Contract Laboratory Program amble danagement Office .3. 35% 918 - Alexanoria, Va. 22313 23/557-2490 FTE: 8-557-2490

IEPA Sample No. 1 MAD 153

Date: 27/18/87

#### INDRGANIC ANALYSIS DATA SHEET

AB NAME: CAMBRIdge Analytical Associates

- CAŠE NO. - Cade 7410

5W MS.: 785

AB BAMPLE 19. No.: E705182-15

ed Report MÓ. 8724182

#### Elements Identified and Reasures

	entration:	Low Tinte	-X		· -	145	
. 11	-ik: Kater	=======================================		- _Y	Elucqe	Other	
			<b>eg</b> (	6 <b>0</b> _46	TYLWR <b>i</b> BDS		
	Aluminum	14,262	ř	15	Magnesium	[3,616]	£
-	Antimony	4 <b>5</b> 04	7.	ĮĻ	Manganesa	266%	P
•	Arsenic	913 == 5076	ost F	15	Mercury	23 -0010	<b>04</b> 1
4	Barium	222N	F	i Ł	Nickel	220	F
	Feryllies -	01.73	٦	1.7	Potassium	11,8503	۶
:	Sadmius	5.7	F'	18	Selanium	£1.33	<del>.</del> =
•	Calcium	12,4523	۲.	15	Bilvar	₹.99	F.
;	Shriamium	1,080	5.	. 22	Sodiua	8033	Ę.
,	Cobelt	278	۶	21	Enallium	3.2U	<u>:</u>
4.	Capper	579M	ਨੰ	22	Vanadium 🕟	43	F
L	lran ·	22,122	F	23	liac	2,2875	₽
2	Lead	3578 .	۶	24			

pathotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are ancouraged. Definition of such flags must be explicit and contained on Sover Page, however.

oncenta:

Joan Mocava



Environmental Testing and Certification Corp. ETC-TOXICON

3213 Monterrey Boulevard Baton Rouge, LA 70814 504-925-5012



USEPA Contract Laboratory Program SMO P.O. Box 818 Alexandria, VA 22313 USEPA EMSL-LV P.O. Box 15027 Las Vegas, NV 89114 ATTN: Data Audit Staff USEPA Region I J.F.K. Federal Building Room 1903 Boston, MA 02203 ATTN: Nancy Barmakian

RE: Contract No. 68-01-7148 1st Bid lot; Case No. 7410; QC Report No. 7410

Enclosed are the analytical data and quality assurance for Case No. 7410 received from USEPA Region I on June 15, 1987. The sample identifications and analyses requested are as follows:

ETC/Toxicon Identification	USEPA Identification	Parameters Requested
4182/02	AH641 Low Water	Purgeable & BNA HSL
4182/03	AH642 Low Soil	Full HSL
4182/04	AH643 Low Water	Purgeable & BNA HSL
4182/05	AH644 Low Water	Full HSL
4182/06	AH645 Low Water	Full HSL
4182/07	AH646 Low Soil	Full HSL
4182/08	AH647 Low Water	Full HSL
4182/0 <del>9</del>	AH648 Low Water	Full HSL
4182/10	AH649 Low Water	Full HSL
4182/11	AH650 Low Soil	Full HSL
4182/12	AH651 Low Water	Full HSL
4182/13	AH652 Low Water	Full HSL
4182/14	AH653 Low Soil	Full HSL
4182/15	AH654 Low Soil	Full HSL
4182/16	AH655 Low Soil	Full HSL
4182/17	AH656 Low Soil	Full HSL
4182/18	AH657 Low Soil	Full HSL
4182/19	AH658 Low Soil	Full HSL

Purgeable volatile fractions of samples AH656 and AH657 required medium level analysis. The surrogate recoveries for these samples were outside of QC Limits necessitating re-extraction and reanalysis of these samples. The same result was observed on re-analysis demonstrating a probable matrix effect in these samples affecting the recovery of the surrogate compounds.

The Base/Neutral/Acid fractions of samples AH643 and AH652 had low or no Acid Surrogate compound recoveries. These samples were re-extracted and re-analyzed with the same result demonstrating a probable matrix effect in these samples for these compounds.

These data were reviewed and no other unusual problems were encountered with these samples.

Sincerely,

Warren Lee Kidd GC/MS Group Leader

Project Manager

Ξ.

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-19

SOIL SAMPLE HATRIX:

-DATA RELEASE AUTHORIZED BY:  $\mathcal{I}_{\!\scriptscriptstyle L}$ 

CASE NO: QC REPORT NO: 7410 CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

PH 7.00

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

96/17/87

CONC/DIL FACTOR:

1.

PERCENT MOISTURE: (NOT DECANTED) 62. 9

CAS NUMBER		UG/K	G	CAS NUMBER		UG/H	(G
74-87-3 CHLOROMETHANE		26	U	78-87-5	1,2-DICHLOROPROPANE	13	U
74-83-9 BROMOMETHANE .		26	IJ	10061-02-6	TRANS-1,3-DICHLOROPROENE .	13	U
75-01-4 VINYL CHLORIDE		26	U	79-01-6	TRICHLOROETHENE	13	U
75-00-3 CHLOROETHANE .		26	บ	124-48-1	DIBROMOCHLOROMETHANE	13	U
75-09-2 HETHYLENE CHLO	RIDE	67	8	79-80-5	1,1,2-TRICHLOROETHANE	13	Ų
67-64-1 ACETONE		28		71-43-2	BENZENE	13	U
75-15-0 CARBON DISULFI	DE	13	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	13	U
75-35-4 1,1-DICHLOROET	HENE	13	U	110-75-8	2-CHLOROETHYLVINYLETHER .	26	U.
75-35-3 1,1-DICHLOROET	HANE	13	IJ	75-25-2	BROMOFORM	13	U
156-60-5 TRANS-1,2-DICH	LOROETHENE .	13	U	108-10-1	4-METHYL-2-PENTANONE	26	U
67-66-3 CHLOROFORM		13	U	591-78-6	2-HEXANONE	26	Ų
107-06-2 1.2-DICHLOROET	HANE	13	U	127-18-4	TETRACHLOROETHENE	13	Ü.
78-93-3 2-BUTANONE		26	U	79-34-5	1,1,2,2-TETRACHLORGETHANE	26	U
71-55-6 1,1,1-TRICHLOR	OETHANE	13	U	108-88-3	TOLUENE	30	
56-23-5 CARBON TETRACH	LORIDE	13	U	198-99-7	CHLOROBENZENE	13	IJ
108-05-4 VINYL ACETATE		26	U	100-41-4	ETHYLBENZENE	13	IJ
75-27-4 BROMODICHLOROM	ETHANE, .	13	U	100-42-5	STYRENE	13	U
					TOTAL XYLENES	13	U

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA . REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO: 7410

CONCENTRATION:

SAMPLE NUMBER AH658

#### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

GPC CLEANUP YES X NO

OATE ANALYZ CONC/DIL FA					RY FUNNEL EXTRACTION YES US LIQUID-LIQUID EXTRACTION		ES
		UG/K	G	CAS NUMBER		UG/K	G
AS NUMBER	PHENOL	870		83-32-9	ACENAPHTHENE	870	U
	BIS(2-CHLOROETHYL)ETHER	870		51-28-5	2,4-DINITROPHENOL		
	2-CHLOROPHENOL	870		100-02-7	4-NITROPHENOL		
	1,3-DICHLOROBENZENE		Ū	132-64-9	OIBENZOFURAN		
	1,4-DICHLOROBENZENE		U	121-14-2	2,4-DINITROTOLUENE		
	BENZYL ALCOHOL		U	606-20-2	2,6-DINITROTOLUENE	870	U
100-51-6	1,2-DICHLOROBENZENE		Ü	84-66-2	DIETHYLPHTHALATE		U
75-50-1 05-46-7	2-METHYLPHENOL	870	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER		U
95-48-7 20430-32-8	8IS(2-CHLOROISOPROPYL)ETHER		U	86-73-7	FLUORENE		U
	4-METHYLPHENOL	870	Ū	100-10-6	4-NITROANILINE		U
106-44-5	N-NITROSO-DI-N-PROPYLAMINE		Ü	534-52-1	4,6-DINITRO-2-METHYLPHENDL		
	HEXACHLOROETHANE	870	Ū	86-30-6	N-NITROSODIPHENYLAMINE (1)		
	NITROBENZENE		U	101-55-3	4-BROMOPHENYL-PHENYLETHER	87₹	U
	ISOPHORONE		U	118-74-1	HEXACHLOROBENZENE	870	U
78-59-1	2-NITROPHENOL		Ü	87-86-5	PENTACHLOROPHENOL		Ü
88-75-5	2,4-DIMETHYLPHENOL		U	85-01-8	PHENANTHRENE		
105-67-9	BENZOIC ACID		บ	120-12-7	ANTHRACENE		
45-85-0	BIS(2-CHLOROETHOXY)METHANE		IJ	84-74-2	DI-N-BUTYLPHTHALATE		U
111-91-1	2,4-DICHLOROPHENOL		ŭ	206-44-0	FLUORANTHENE		
120-83-2		870	U	129-00-0	PYRENE		
120-82-1	1,2,4-TRICHLOROBENZENE		Ü	85-68-7	BUTYLBENZYLPHTHALATE		J
91-20-3	• • • • • • • • • • • • • • • • • • • •	870	Ü	91-94-1	3.3'-DICHLOROBENZIDINE		
106-47-8	4-CHLOROANILINE	870	u	56-55-3	BENZO(A)ANTHRACENE		
87-68-3	HEXACHLOROBUTADIENE	870	U	117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE		
59-50-7	• • • • •	870	U	218-01-9	CHRYSENE		
91-57-6	2-METHYLNAPHTHALENE	870	U	117-84-0	DI-N-OCTYL PHTHALATE		
77-47-4	HEXACHLOROCYCLOPENTADIENE		u	205-99-2	BENZO(B)FLUORANTHENE		
88-06-2	2,4,6-TRICHLOROPHENOL		_	207-08-9	BENZO (K) FLUORANTHENE 8704	_800	W ^c ,
95-95-4	2.4.5-TRICHLOROPHENOL			50-32-8	BENZO(A) PYRENE		
91-58-7	2-CHLORONAPHTHALENE			193-39-5	INDENO(1, 2, 3-CB) PYRENE		
88-74-4				53-70-3	DIBENZ(A, H) ANTHRACENE		υ
131-11-3	DIMETHYL PHTHALATE			191-24-2	BENZO(G, H, I) PERYLENE		J
208-96-8	ACENAPHTHYLENE			171-24-4			

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

Laboratory Name: ETC-Toxicon Laboratories, Inc. Case No: 7410

Sample Number AH658

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jul-97

Date Analyzed: 24-Jul-97

Conc/Dil Factor: 5

Percent Moisture(decanted) 0

SPC Cleanup Yes [x]-No
Separatory Funnel Extraction Yes
Continuous Liquid-Liquid Extraction Yes

CAS	•	ug/L or [ug/Kg]
Number	•	
	Alaka BUC	105 U
319-84-6	Alpha-BHC	105 U
319-85-7	Seta-BHC	105 U
319-86-8	Delta-BHC	105 U
58-89-9	Samma-BHC (Lindane)	
76-44-8	Heptachlor	105 U
309-00-2	Aldrin	112
1024-57-3	Heptachlor Epoxide	
959-98-8	Endosulfan I	
60-57-1	Dieldrin	
72-55-9	4,4'-DDE	211 U
72-20-8	Endrin	211 U
33213-65-9	Endosulfan II	211 U
72-5 <b>4-8</b>	4,4'-DDD	211 U
1-31-07-8	Endosulfan Sulfate	211 U
50-29-3	4,4'-DDT	211 U
72-43-5	Methoxychlor	1053 U
53494-70-5	Endrin Ketone	211 U
57-74-9	Chlordane	1053 U
B001-35-2	Toxaphene	2105 U
12674-11-2	Aroclor-1016	1053 U
11104-28-2	Aroclor-1221	1053 U
11141-16-5	Aroclor-1232	1053 U
53469-21-9	Aroclor-1242	
12672-29-6	Aroclor-1248	
11097-69-1	Arpclor-1254	
11096-82-5	Aroclor-1260	
110.0 01 0		

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vs =

or Ws = 1.5

Vt =

5000

Vi = 3.0

Form I



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703/557-2490 • FTS / 557-2490

Sample Number

AH 657

7410013717

### ORGANICS TRAFFIC REPORT

Case Number:	② SAMPLEC	ONCENTRATI	ON	4 Sh	р То:		
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Sample Site Name/Code.							
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	Soil/S	ediment	ಬ್ಯಾಗವುದಿಗಳು	Ship'	Го:		
(5) Regional Office \1505AL	6 For each sam	ple collected sp	ecify nu	nber	(I) Analysis Fab:		
Sampling Personnel Aurob	of containers	used and mark v	rolume le	Aef	Rec'd by:		
		r Praditionis Culturalists		د. معارفها	Date Rec'd 1/15/27		
D. Junto.			1	·	Sample Condition on Receipt (e.g., broken, no		
103 - 120 - 3000	white copylito the HW	Number of: Containers	Total Vo	mate dume	ice, Chain-of-Custody, etc.)		
cought (Phone) space highida					10 ic. sample per		
Sampling Date:	Water (Extractable)	ែង៤៩៩ ៩ 42 ដោយមរុណៈ	<b>គេ</b> ហ្គេមន <b>េ</b> ១	gura.	Rppier 80° F.		
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Ci. Information	Soil/Sediment			<del>` ` ` - · · - · · · · · · · · · · · · · </del>	papers - my		
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Leachate	_ Other (specify)_						
- General Directions	<u> </u>		·	<del>-</del>			
Special Handling Instruc							
(e.g., safety precautions, hazard	ous nature)		•				
- Alexandra, Magra (2001d	•				· . 🗸		

LAB COPY FOR RETURN TO SMO

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-18RI

SAMPLE MATRIX:

В

SOIL

DATA RELEASE AUTHORIZED BY:

, G

CASE NO: 7410

QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: \$6/15/87

**VOLATILE COMPOUNDS** 

CONCENTRATION:

MEDIUM

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/18/87

CONC/DIL FACTOR:

1.

PH 7.40

PERCENT MOISTURE: (NOT DECANTED) 45.

CAS NUMBER		UG/K	G	CAS NUMBER		UG/R	G
74-87-3	CHLOROMETHANE	1800	น	78-87-5	1,2-DICHLOROPROPANE	910	فا
74-83-9	BROMOMETHANE	1800	U	10061-02-6	TRANS-1, 3-DICHLOROPROENE .	910	U
75-01-4	VINYL CHLORIDE	1800	U	79-01-6	TRICHLOROETHENE	910	Ų
75-00-3	CHLOROETHANE	1800	U	124-48-1	DIBROMOCHLOROMETHANE	910	U
75-09-2	METHYLENE CHLORIDE	560	BJ	79-00-5	1,1,2-TRICHLOROETHANE	910	U
67-64-1	ACETONE	830	BJ	71-43-2	BENZENE	910	Ų
75-15-0	CARBON DISULFIDE	910	u	10061-01-5	CIS-1,3-DICHLOROPROPENE .	710	U
75-35-4	1,1-DICHLORGETHENE	910	ប	110-75-8	2-CHLOROETHYLVINYLETHER .	1800	Ü
75-35-3	1,1-DICHLORGETHANE	910	U	75-25-2	BROMOFORM	710	ឞ
156-60-5	TRANS-1, 2-DICHLOROETHENE .	910	U	108-10-1	4-METHYL-2-PENTANONE	1800	U
67-66-3	CHLOROFORM	910	U	591-78-6	2-HEXANONE	1800	U
107-06-2	1,2-DICHLOROETHANE	910	U	127-18-4	TETRACHLOROETHENE	910	U
78-93-3	2-BUTANONE	2400	8	79-34-5	1,1,2,2-TETRACHLOROETHANE	1800	U
71-55-6	1,1,1-TRICHLORGETHANE	910	U	108-88-3	TOLUENE	710	U
56-23-5	CARBON TETRACHLORIDE	910	U	108-90-7	CHLOROSENZENE	910	U
108-05-4	VINYL ACETATE	1800	U	100-41-4	ETHYLBENZENE	710	U
75-27-4	BROMODICHLOROMETHANE	918	U	100-42-5	STYRENE	910	U
					TOTAL XYLENES	910	IJ

- 8 COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2490 • FTS: 557-2490

Sample Number AH 657

include the supplied to the state of the sta	② SAMPLE CO	NICENTID KTT	ON (4)	Ship To:
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<ol> <li>Upop completion of extraction</li> </ol>	preparing respective	concentration ::: um Concentration	Canal Language	ATON ROUGE, LA
Sample Site Name/Code:	· ·		-	,
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bouque ordania productor	Intonicle Extra Chilo		. 1	ransfer
C. D. C.	Soil/S	ediment	<b>5</b>	Ship To:
OD : 10#:->\50\$\0		111-4-3		er (1) Analysis (ab:
(5) Regional Office VSAL Sampling Personnel Papolatory	CEST CONTAINERS	pie conected sp ised and mark v	olume level	Rec'd by:
Sampling Letzonner	poyon each bottle	coratory Carometa-	Extractious (O)	Date Rec'd. 1/15/87
J. Junton	y for your nies		ī ,	Sample Condition
4. Send tr (Name) reel of the O.F.	white copy to the HW	Sec Number of	Approxima	on Receipt (e.g., broken, no ice, Chain-of-Custody, etc.)
condit (Phone) space Provide		Containers	Total Volum	10 Cal sample per
a Delicence Laboration of the formation of	Water (Extractable)	i nois chrimaine	เล้าน้ำกรูร จะเกามุ	Ropler 80° F.
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The state of the s	Soil/Sediment			7 /
Check condition of all samples	(Extractable)	. 1	805	
Analy La Die X Directions	Soil/Sediment	1	8 07.	
Name of Carrier The 129	(VOA)	<u></u>		
5. Relatedary exciplems and/or gr	esucias concerning 32/	procedures or the	dse of OTHS.	O1
<u>60281</u>	a your convenience or			
2 La Date Shippeds well as the	e address and phone r	imper of the HWI S	भग्नाकोन स्थानक	eiven
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Leachate	Other (specify) _			
General Directions			<u> </u>	
(n) Special Handling Instru				
(e.g., safety precautions, hazar	dous nature)	. •		
L FO Box 819				100
Hanardous Waste Investigati Sample Munagement Office	cua.			74100136 \$8
US SIVERONMENTAL P	MOTEC MONTHOS	FOR RETURN TO SM	MO	

LAB COPY FOR RETURN TO SMO

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-18

SAMPLE MATRIX: SOIL

DATA RELEASE AUTHORIZED BY: 9

CASE.NO: 7410

QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

MEDIUM

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/18/87

CONC/DIL FACTOR:

1. PH 7.88

PERCENT MOISTURE: (NOT DECANTED) 45.0

CAS NUMBER UG/KG UG/KG CAS NUMBER 1,2-DICHLOROPROPANE . . . 910 U CHLOROMETHANE . . . . . . . 1800 U 78-87-5 74-87-3 10061-02-6 TRANS-1, 3-DICHLOROPROENE . 710 74-83-9 BROMOMETHANE . . . . . . . 1900 U TRICHLOROETHENE . . . . . . 910 75-01-4 VINYL CHLORIDE . . . . . . 1800 U . 79-01-6 710 75-00-3 CHLOROETHANE . . . . . . . . 1800 U 124-48-1 DIBROMOCHLOROMETHANE . . . 75-09-2 METHYLENE CHLORIDE . . . 460 BJ 79-00-5 1,1,2-TRICHLOROETHANE . . 710 BENZENE . . . . . . . . . . . . ACETONE . . . . . . . . . 1200 BJ 71-43-2 67-64-1 10061-01-5 CIS-1; 3-DICHLOROPROPENE 910 75-15-0 CARBON DISULFIDE . . . . . 910 U 75-35-4 1.1-DICHLOROETHENE . . . . 910 U 2-CHLOROETHYLVINYLETHER . 1800 110-75-8 910 75-25-2 75-35-3 1,1-DICHLOROETHANE . . . . 910 U 156-60-5 TRANS-1,2-DICHLOROETHENE . 108-10-1 4-METHYL-2-PENTANONE . . . 1800 910 U 591-78-6 1800 67-66-3 910 U 910 U 107-06-2 1,2-DICHLOROETHANE . . . . 127-18-4 TETRACHLOROETHENE . . . . 79-34-5 1,1,2,2-TETRACHLOROETHANE 1800 78-93-3 1,1,1-TRICHLORDETHANE . . 910 U 108-88-3 TOLUENE . . . . . . . . . . . . 71-55-6 910 56-23-5 CARBON TETRACHLORIDE . . . 916 U 108-90-7 100-41-4 108-05-4 ETHYLBENZENE . . . . . VINYL ACETATE . . . . . . 1800 910 BROMODICHLOROMETHANE . . . 100-42-5 75-27-4 TOTAL XYLENES . . . . . .

- 8 COMPOUND WAS DETECTED IN THE SC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

DTC 6/18/87

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

FORM I

8

LABORATORY NAME: ETC/TOXICON

CASE NO:

7410

SAMPLE NUMBER AH657

## ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

CONCENTRAT	ION: CTED/PREPARED:	LOW 06/15/87			GPC CLEAN SEPARATOR	RY FUNNEL EXTRACTION	N YES		
		07/17/87			CONTINUOL	IS FIGUID-FIGUID EX.	TRACTION	YE!	5
DATE ANALY OIL FACTOR		25.0							
	ISTURE: {DECANT								
PERCENT NO	1310KE. TOCCHIT								
CAS NUMBER			UG/KG		CAS NUMBER			UG/KG	
108-95-2	PHENOL		15000	U	83-32-9	ACENAPHTHENE			
111-44-4	BIS(2-CHLOROET				51-28-5	2,4-DINITROPHENOL			
95-57-8	2-CHLOROPHENOL				100-02-7	4-NITROPHENOL			
541-73-1	1, 3-DICHLOROBE				132-64-9	DIBENZOFURAN			
186-46-7	1,4-DICHLOROBE				121-14-2	2,4-DINITROTOLUENE			
100-51-6	SENZYL ALCOHOL				606-20-2	2,6-DINITROTOLUENE			
95-50-1	1.2-DICHLOROBE				84-66-2	DIETHYLPHTHALATE .			
95-48-7	2-METHYLPHENOL				7005-72-3	4-CHLOROPHENYL-PHE			
	BIS(2-CHLOROIS				86-73-7	FLUORENE			
106-44-5	4-METHYLPHENOL				100-10-6	4-NITROANILINE			
621-64-7	N-NITROSO-DI-N				534-52-1	4.6-DINITRO-2-METH			
67-72-1	HEXACHLOROETH				86-30-6	N-NITROSODIPHENYLA			
98-95-3	NITROSENZENE .				101-55-3	4-BROMOPHENYL-PHEN		15000	
78-59-1	ISOPHORONE				118-74-1	HEXACHLOROBENZENE		15000	U
88-75-5	2-NITROPHENOL				87-86-5	PENTACHLOROPHENOL			
105-67-9	2,4-DIMETHYLP				85-01-8	PHENANTHRENE			
65-85-Ø	BENZOIC ACID				120-12-7	ANTHRACENE		15000	U
111-91-1	BIS (2-CHLOROE				84-74-2	DI-N-BUTYLPHTHALAT			
120-83-2	2,4-DICHLOROP				206-44-0	FLUORANTHENE		15000	U
120-83-1	1.2.4-TRICHLO				129-00-0	PYRENE			
91-20-3	NAPHTHALENE				85-68-7	BUTYLBENZYLPHTHALA			
106-47-8	4-CHLOROANILI				91-94-1	3,3'-DICHLOROBENZI			
87-68-3	HEXACHLOROBUT				56-55-3	8ENZO(A)ANTHRACENE			
59-50-7	4-CHLORO-3-HE				117-81-7	BIS(2-ETHYLHEXYL)F			
91-57-6	2-METHYLNAPHT				218-01-9	CHRYSENE		15000	U
77-47-4	HEXACHLOROCYC				117-84-0	DI-N-OCTYL PHTHALA	ATE	15000	IJ
88-06-2	2,4,6-TRICHLO				205-99-2	BENZO(B)FLUORANTHE			
95-95-4	2,4,5-TRICHLO				207-08-9	BENZO(K)FLUORANTHE	ENE	15000	U
91-58-7	2-CHLORONAPHT				50-32-8	BENZO(A)PYRENE		15000	U
88-74-4	2-NITROANILIN	E	73000	IJ	193-39-5	INDENO(1,2,3-CD)P	VRENE	15000	U
131-11-3		ALATÉ			53-70-3	DIBENZ(A,H)ANTHRA	IENE	15000	U
208-96-8		IE			191-24-2	BENZO(G, H, I)PERYL	ENE	15000	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . . 73000 U

Laboratory Name: ETC-Toxicon Laboratories, Inc.

7410

Sample Number AH657

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

5

Date Extracted/Prepared: 15-Jul-87

Date Analyzed: 24-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

[x]-No Yes SPC Cleanup Separatory Funnel Extraction

Continuous Liquid-Liquid Extraction

Yes Yes

ug/L or [ug/Kq] CAS Number 73 U Alpha-BHC.... 319-84-6 Beta-BHC ..... 73 U 319-85-7 73 U Delta-BHC..... 319-86-8 73 U Samma-BHC (Lindane) ..... 58-89-9 73 U Heptachlor ..... 76-44-8 73 U Aldrin ..... 309-00-2 Heptachlor Epoxide..... 73 U 1024-57-3 73 L Endosulfan I ...... 959-98-8 145 U Dieldrin ...... 60-57-1 145 U 4.4'-DDE ..... 72-55-9 Endrin ..... 145 · U 72-20-8 145 U Endosulfan II ..... 33213-65-9 145 U 4,4'-DDD ...... 72-54-8 145 U Endosulfan Sulfate..... 1-31-07-8 4,4'-DDT ..... 145 U 50-29-3 727 U Methoxychlor ..... 72-43-5 145 U Endrin Ketone ..... 53494-70-5 Chlordane ..... 727 U 57-74-9 1455 U Toxaphene ..... 8001-35-2 727 U Aroclor-1016 ..... 12674-11-2 Aroclor-1221 ..... 727 U 11104-28-2 727 L Aroclor-1232 ..... 11141-16-5 727 U Aroclor-1242 ..... 53469-21-9 727 U Aroclor-1248 ..... 12672-29-6 Aroclor-1254 ..... 1455 U 11097-69-1 1455 U Aroclor-1260 ..... 11096-82-5

> Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vs =

or Ws = 1.5

Vt =

5000

Vi = 3.0

Form I



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box \$18. Alexandria, Virginia 22313—703 557-2493 • FTS 557-2493

Sample Number
AH 656

ORGANICS TRAFFIC REPORT

Section 100						
(1) Case Number:	② SAMPLE C	ONCENTRATIO	ON Shi	p To:		
, in 9410 ·	(Check One)					
11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	as Manage North Office restrictions the last page (yeller) colonial (CON)					
<ul> <li>Open completed of societies?</li> </ul>	mehoran Low C	Concentration	e and print post \$40	on rouce, la		
Sample Site Name/Code:	Medit	ım Concentratio	on Sign			
complete the appropriate sect	ाष्ट्रसम्बद्धाः १५०० व सञ्चर	ยาย ฮายย คองศาสัสเริงกรณ์	iames tan ra <b>Attn:</b>	LEE KIED		
Complete the appropriate sect	3 SAMPLE M	LATRIX EIN ZEINE				
	(Check C	ne)	Trans			
ponding Otoppies saboratory	Water	FCE				
E Book To Find	Pagoti 161/S	ediment	n ting con   Spib,	10.		
on the contribution of the first term of the fir		7.:				
(5) Regional Office NET AND	6 For each sam	ple collected sp	ecify number	(I) Analysis sh		
Sampling Personnel: apotsicia	of containers	used and mark v	olume level	Rec'n by fall f		
Pambring Letzonners	on each bottle	Coorators Chronicia.	Hattractone (China	Date Rec'd: 4/15/67		
- Cothanil March	y for your nles.			Sample Condition		
Send it Name) neer beine OIF	white copy) to the HM	A San Number of	Approximate	on Receipt (e.g., broken, no ice, Chain-of-Custody, etc.)		
0005-020-5000		Containers	Total Volume	Lo, Cham of Custory, Char		
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	Soil/Sediment					
And Salabo EX Directions	(VOA)	2	804			
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(8) Sample Description to be	ı or pencil, and make sı	is administration is	(a):Sample LO	Cation		
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Use only the marenals provide	cital eighties brose et a	LINGTONI'.		•		
1	Other (specify).			·		
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10 Special Handling Instru						
(e.g., safety precautions, hazar	dous nature)					
Axandra, Virginia 22319		-				

U.S. SINVIRONMENTAL PROTECTICINA COLA LOS BELLIEN LO RMO Hazardous Waste Investigation :
Sample Menagament Office
7.0 Box 818

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON
LAB SAMPLE ID NO: 4182-17R
SAMPLE MATRIX: SOIL

SAMPLE MATRIX: SOIL
DATA RELEASE AUTHORIZED BY: Wann Lu 11.

CASE NO: 7410 //QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

HEDIUM

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/18/87

CONC/DIL FACTOR:

1.

PH 7.00

PERCENT HOISTURE: (NOT DECANTED) 57.0

CAS NUMBER		UG/K	G	CAS NUMBER		U	G/K(	G
74-87-3	CHLOROMETHANE	2300	U	78-87-5	1,2-DICHLOROPROPANE	12	99	Ü
74-83-9	BROMOMETHANE	2300	U	10061-02-6	TRANS-1,3-DICHLOROFROENE .	12	00	U
75-01-4	VINYL CHLORIDE	2300	Ų	79-01-6	TRICHLORGETHENE	1,2	90	U
75-00-3	CHLORGETHANE	2300	U	124-48-1	DIBROMOCHLOROMETHANE	12	.00	U
75-09-2	METHYLENE CHLORIDE	1200	8	79-00-5	1,1,2-TRICHLOROETHANE	12	.00	Ü
67-64-1	ACETONE	2000	ВJ	71-43-2	BENZENE	12	00	U
75-15-0	CARBON DISULFIDE	1200	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	12	00	U
75-35-4	1,1-DICHLOROETHENE	1200	U	110-75-8	2-CHLOROETHYLVINYLETHER .	23	99	U
75-35-3	1,1-DICHLOROETHANE	1200	U	75-25-2	BROMOFORM	12	99	U
156-60-5	TRANS-1,2-DICHLOROETHENE	1200	U	108-10-1	4-HETHYL-2-PENTANONE	23	00	U
67-66-3	CHLOROFORM	1200	U	591-78-6	2-HEXANONE	23	80	U
107-06-2	1,2-DICHLORGETHANE	1200	U	127-18-4	TETRACHLOROETHENE	17	99	
78-93-3	2-BUTANONE	4000	8	79-34-5	1,1,2,2-TETRACHLOROETHANE	23	60	U
71-55-6	1,1,1-TRICHLOROETHANE .	1200	U	108-88-3	TOLUENE	12	99	U
56-23-5	CARBON TETRACHLORIDE	1200	U	108-90-7	CHLOROBENZENE	12	99:	U
108-05-4	VINYL ACETATE	2300	U	100-41-4	ETHYLBENZENE	12	00	U
75-27-4	BROMODICHLOROMETHANE	1200	U	100-42-5	STYRENE	12	60	U
					TOTAL XYLENES	12	00	U

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

FORM I



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703, 557-2493 • FTS / 557-2493

Somple Number AH 656

6	ADC AF	MECC	THEATH	C REPORT
	'			

(1) Case Number:		ONCENTRATIO		Ship To:
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Sample Site Name/Code:				
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				er 11 Analysis Lab
(5) Regional Office VERSIV	6 For each sam	ple collected sp	ecity number	
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1	Other (specify).		1	
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(0) Special Handling Instru	ctions:	11.	– . –	
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The second secon	LAB COLA	FOR RETURN TO SI	·IC	

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-17

SOIL SAMPLE MATRIX:

DATA RELEASE AUTHORIZED BY: Www.

7410 CASE NO: GC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNOS

CONCENTRATION:

MEDIUM

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

**06/18/87** 

CONC/DIL FACTOR:

1.

7.00 PH

PERCENT MOISTURE: (NOT DECANTED) 57.0

CAS NUMBER		UG/K	G	CAS NUMBER		UG/K	.G
74-87-3	CHLOROMETHANE	2300	U	78-87-5	1,2-DICHLOROPROPANE	1200	U
74-83-9	BROMOMETHANE		u	10061-02-6	TRANS-1,3-DICHLOROPROENE .	1200	U
75-01-4	VINYL CHLORIDE	2300	U	79-01-6	TRICHLOROETHENE	1200	U
75-00-3	CHLOROETHANE		U	124-48-1	DIBROMOCHLOROMETHANE	1200	U
75-09-2	METHYLENE CHLORIDE		BJ	79-00-5	1,1,2-TRICHLORGETHANE	1200	U
67-64-1	ACETONE		8J	71-43-2	BENZENE	1200	Ų
75-15-0	CARBON DISULFIDE		U	10061-01-5	CIS-1, 3-DICHLOROPROPENE .	1200	U
75-35-4	1,1-DICHLORGETHENE		Ū	110-75-8	2-CHLOROETHYLVINYLETHER .	2300	U
75-35-3	1,1-DICHLOROETHANE		u	75-25-2	BROMOFORM	1200	U
156-60-5	TRANS-1, 2-DICHLOROETHENE		Ū	108-10-1	4-METHYL-2-PENTANONE	2300	U
67-66-3	CHLOROFORM	1200	Ū	591-78-6	2-HEXANONE	2300	U
107-06-2	1,2-DICHLOROETHANE		Ū	127-18-4	TETRACHLOROETHENE	1200	U
78+93-3	2-BUTANONE		В	79-34-5	1, 1, 2, 2-TETRACHLORGETHANE	2300	U
71-55-6	1, 1, 1-TRICHLOROETHANE		u	108-88-3	TOLUENE	1200	U
	CARBON TETRACHLORIDE		Ü	108-90-7	CHLOROBENZENE	1289	U
56-23-5	VINYL ACETATE		U	100-41-4	ETHYLBENZENE	1200	U
108-05-4	BROMODICHLOROMETHANE		U	100-42-5	STYRENE	4555	U
75-27-4	BRUMOUICALORONE I MANE	1100	•	227 72 2	TOTAL XYLENES		U

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE HINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO: 7410

SAMPLE NUMBER AH656

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW DATE EXTRACTED/PREPARED: 06/15/87		GPC CLEAI Separato	NUP YES X NO RY FUNNEL EXTRACTION YE	<b>5</b> .
DATE ANALYZED: 07/18/87		CONTINUO	US LIGUID-LIGUID EXTRACTION	YES
DIL FACTOR: 5.00				
PERCENT MOISTURE: (DECANTED) 57.0				
CAS NUMBER	UG/KG	CAS NUMBER		UG/KG
108-95-2 PHENOL	. 3800 U	83-32-9	ACENAPHTHENE	
111-44-4 BIS(2-CHLOROETHYL)ETHER	. 3800 U	51-28-5	2.4-DINITROPHENOL	
95-57-8 2-CHLOROPHENOL	. 38 <b>00 U</b>	100-02-7	4-NITROPHENOL	
541-73-1 1,3-DICHLOROBENZENE	. 38 <b>00</b> U	132-64-9	DIBENZOFURAN	
106-46-7 1.4-DICHLOROBENZENE	. 3800 U	121-14-2	2,4-DINITROTOLUENE	3800 U
100-51-6 BENZYL ALCOHOL	. 3800 U	606-20-2	2,6-DINITROTOLUENE	3800 0
95-50-1 1,2-DICHLOROBENZENE	. 3800 U	84-66-2	DIETHYLPHTHALATE	3800 0
95-48-7 2-METHYLPHENOL		7005-72-3	4-CHLOROPHENYL-PHENYLETHER	3800 U
39638-32-9 8IS(2-CHLOROISOPROPYL)ETH	ER3800 U	86-73-7	FLUORENE	3800 R
196-44-5 4-METHYLPHENOL		100-10-6	4-NITROANILINE	19000 U
621-64-7 N-NITROSO-DI-N-PROPYLAMIN	E 3800 U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	19000 U
67-72-1 HEXACHLOROETHANE		86-3 <b>0-6</b>	N-NITROSODIPHENYLAMINE (1)	3800 U
98-95-3 NITROBENZENE		101-55-3	4-BROMOPHENYL-PHENYLETHER	3800 U
78-59-1 ISOPHORONE		118-74-1	HEXACHLOROBENZENE	3800 U
88-75-5 2-NITROPHENOL		87-86-5	PENTACHLOROPHENOL	19000 U
105-67-9 2.4-DIMETHYLPHENOL		85-01-8	PHENANTHRENE	4300
65-85-0 BENZOIC ACIO		120-12-7	ANTHRACENE	
111-91-1 BIS(2-CHLOROETHOXY)METHAN		84-74-2	DI-N-BUTYLPHTHALATE	
120-83-2 2,4-DICHLOROPHENOL		206-44-0	FLUORANTHENE	6500
120-82-1 1,2,4-TRICHLOROBENZENE .		129-08-0	PYRENE	
91-20-3 NAPHTHALENE		85-68-7	BUTYLBENZYLPHTHALATE	38 <b>00</b> U
106-47-8 4-CHLOROANILINE		91-94-1	3,3'-DICHLOROBENZIDINE	7700 U
87-68-3 HEXACHLOROBUTADIENE		56-55-3	BENZO(A)ANTHRACENE	3800 U
59-50-7 4-CHLORD-3-METHYLPHENGL		117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	2000 J
	. 3800 U	218-01-9	CHRYSENE	3700 J
77-47-4 HEXACHLOROCYCLOPENTADIENE		117-84-0	DI-N-OCTYL PHTHALATE	
88-06-2 2,4,6-TRICHLOROPHENOL .		205-99-2	BENZO(8)FLUORANTHENE	
95-95-4 2,4,5-TRICHLOROPHENOL		207-08-9	BENZO(K)FLUORANTHENE	
		50-32-8	BENZO(A) PYRENE	
91-58-7 2-CHLORONAPHTHALENE			INDENO(1, 2, 3-CO) PYRENE	
			DIBENZ(A, H) ANTHRACENE	
			BENZO(G, H, I) PERYLENE	
208-96-8 ACENAPHTHYLENE	. 3000 U	717-74-7	#=11=# (#(1)( *(1 = 1) ( = )	

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . 19000 U

Laboratory Name: ETC-Toxicon Laboratories, Inc.

7410

Sample Number AH656

Organics Analysis Data Sheet (Page 3)

Pesticides/PCBs

Concentration: [Low] Medium (Circle one) Date Extracted/Prepared: 15-Jul-87 Date Analyzed: 24-Jul-87 Conc/Dil Factor: Percent Moisture(decanted)

[x]-No Yes GPC Cleanup Separatory Funnel Extraction Yes Yes Continuous Liquid-Liquid Extraction

319-84-6 319-85-7 Beta-8HC 319-86-8 Delta-BHC 58-89-9 Gamma-BHC (Lindane) 76-44-8 Heptachlor 309-00-2 Aldrin Heptachlor Epoxide 959-98-8 Endosulfan I 72-55-9 4,4 -DDE 33213-65-9 Endosulfan II 72-54-8 4,4 -DDD		ug/Kg]
319-85-7 Beta-BHC	93	រប
319-86-8	93	i U
58-89-9 Gamma-BHC (Lindane)  76-44-8 Heptachlor  309-00-2 Aldrin  1024-57-3 Heptachlor Epoxide  959-98-8 Endosulfan I  72-55-9 4,4 -DDE  72-20-8 Endrin  33213-65-9 Endosulfan II	93	i ii
76-44-8 309-00-2 1024-57-3 Heptachlor Epoxide 959-98-8 60-57-1 72-55-9 72-20-8 Endosulfan I  Endrin  Endrin  Endrin  Endrin  Endrin  Endrin  Endosulfan I  Endrin  Endrin  Endosulfan I  Endrin	93	Ü
309-00-2 Aldrin	93	U
1024-57-3 Heptachlor Epoxide	93	Ü
959-98-8 Endosulfan I	93	U
60-57-1 Dieldrin	93	U
72-55-9 4,4'-DDE	186	U
72-20-8 Endrin	186	U
33213-65-9 Endosulfan II	186	U
	186	· N
//~.14=D 7.7 UUU saassaasaasaasaasaasaa	186	U
1-31-07-8 Endosulfan Sulfate	186	U
50-29-3 4,4'-DDT	186	Ü
72-43-5 Methoxychlor	930	U
53494-70-5 Endrin Ketone	186	U
57-74-9 Chlordane	930	U
8001-35-2 Toxaphene	1860	U
12674-11-2 Aroclor-1016	930	U
11104-28-2 Aroclor-1221	930	U
11141-16-5 Aroclor-1232	930	Ü
53469-21-9 Aroclor-1242	930	U
12672-29-6 Aroclor-1248	930	U
11097-69-1 Aroclor-1254	1850	IJ
11096-82-5 Arocior-1260	1860	U
Vi = Volume of extract injected (ul)		
Vs = Volume of water extracted (m)		
We = Noight of sample extracted (0)		

Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vs =

or #s = 1.5

Vt =

5000

Vi = 3.0

Form I



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 : 557-2490 • FTS : 557-2490

Sample Number
AH 655

Case Number:	② SAMPLE CONCENTRATION	ON 4 Sh	ip To:
7410	(Check One)	icon Inc	
The property which is a second	Low Concentration	ខ ទីពេល ដែលខ្លាំ ខែ <b>ខ្លែង_{ដែរ}</b>	ON ROUSE, LA
Sample Site Name/Code:	Medium Concentration		•
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	(Check One)	analysis;	الكال كالك الناسلة النسنة السنة
pending Organics Laboratory	hromgie-Extremateblo-E).	Trans	
	Soil/Sediment	sa pia conta r Ship '	To:
(5) Regional Office: VE2SAA	6 For each sample collected sp	ecify number	11 Analysis Lab;
Sampling Personnel. 40019101	CP of containers used and mark v	rolume level 'PG	Rec'd by flaff
19 4. 4	boxou each pottle boratory Chronicle	Fritzenione (M.	Date Rec'd: 4/15/197
Name) is constant to the control of	white copy) to the HWI San <b>Mitmpe</b> t of	la Approximate	on Receipt (e.g., broken, no
10.7 - KO- 3200	Containers		ice, Chain-of-Custody, etc.)
า ทาง สายการมายการ รษฐนะรายติวา ขณาอุญา <b>(БРоче)</b> , space provide	(Extractable)	tarding sample	no cue samples hu
Sampling Date:			apprex. 80° F custody seal intal
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AND PERTY DIRECTIONS	Soil/Sediment (VOA)	80र.	
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6 12/87	Office. Sandas conceening SI/ Dyngoedures of the		
	e address and phone randomothe HWEs rayour convenience of the back of each pa		
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Airbill Number:	OTR). Organics Labre story Chrechice Ext	smons (OC: -E)	
Sample Description, being the series of		05-11	
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Leachate	_ Other (specify)	·	•
Special Handling Instruction			
(e.g., safety precautions, hazard			
্ৰান্ত কৰে কৰা প্ৰতিয়েশৰ বুঁহাৰিছিল। বিভাগৰ কৰে সংগ্ৰাহ			
i Skunjik Munegenieur Office PC Buy Sie		,	
Historians Massa bineasiagaes		.74	10013538
DE EMARCIANEMINT BE	LAB COPY FOR RETURN TO SM	10	

#### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAB SAMPLE ID NO: 4182-16

SAMPLE HATRIX:

SOIL

DATA RELEASE AUTHORIZED BY:

7410 CASE NO: GC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

@6/17/87

CONC/DIL FACTOR:

1. PH

PERCENT MOISTURE: (NOT DECANTED) 11. @

CAS NUMBE	ER .	UG/H	(G	CAS NUMBER	•	UG/H	₹G
74-87-3	CHLOROMETHANE	11	U	78-87-5	1,2-DICHLOROPROPANE	6	U
74-83-9	BROMOMETHANE	11	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	6	U
75-01-4	VINYL CHLORIDE	11	U	79-01-6	TRICHLORGETHENE	6	U
75-00-3	CHLOROETHANE	11	U	124-48-1	DIBROMOCHLOROMETHANE	6	U
75-09-2	METHYLENE CHLORIDE	100	8	79-00-5	1,1,2-TRICHLOROETHANE	6	U
67-64-1	ACETONE	3	J	71-43-2	BENZENE	6	U
75-15-0	CARBON DISULFIDE	6	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	6	U
75-35-4	1,1-DICHLOROETHENE	6	U	110-75-8	2-CHLOROETHYLVINYLETHER .	11	U
75-35-3	1,1-DICHLOROETHANE	6	U	75-25-2	BROMOFORM	4	U
156-60-5	TRANS-1,2-DICHLOROETHENE .	6	U	108-10-1	4-METHYL-2-PENTANONE	11	U
67-66-3	CHLOROFORM	. 6	U	591-78-6	2-HEXANONE	11	Ü
107-06-2	1.2-DICHLOROETHANE	6	U	127-18-4	TETRACHLOROETHENE	6	U
78-93-3	2-BUTANONE	11	U	79-34-5	1,1,2,2-TETRACHLORGETHANE	11	U
71-55-6	1,1,1-TRICHLOROETHANE	6	U	108-88-3	TOLUENE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U	108-90-7	CHLOROBENZENE	6	U
108-05-4	VINYL ACETATE	11	U	100-41-4	ETHYLBENZENE	6	U
75-27-4	BROMODICHLOROMETHANE	6	บ	100-42-5	STYRENE	6	IJ
					TOTAL XYLENES	6	U

- 8 COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO:

7410

SAMPLE NUMBER

4H655

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

CONCENTRATE DATE EXTRA	ACTED/PREPARED: 4/15/87				NUP YES X NO BY FUNNEL EXTRACTION YE BUS LIQUID~LIQUID EXTRACTION	_	/ES
DIL FACTOR							
	DISTURE: (DECANTED) 11.0						
CAS NUMBEI	R	UG/K	.G	CAS NUMBER		UG/H	(G
108-95-2	PHENOL	740	-	83-32-9	ACENAPHTHENE		-
111-44-4	BIS(2-CHLOROETHYL)ETHER .	740		51-28-5	2.4-DINITROPHENOL		บ
95-57-8	2-CHLOROPHENOL	740	ū	100-02-7	4-NITROPHENOL		_
541-73-1	1,3-DICHLOROBENZENE	740	IJ	132-64-9	DIBENZOFURAN		U
196-46-7	1.4-DICHLOROBENZENE	740	Ü	121-14-2	2.4-DINITROTOLUENE		Ü
100-51-6	BENZYL ALCOHOL	740	IJ	606-20-2	2,6-DINITROTOLUENE		Ü
95-50-1	1,2-DICHLOROBENZENE	740	U	84-66-2	DIETHYLPHTHALATE	740	U
95-48-7	2-METHYLPHENOL	740	Ü	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	740	u.
•	BIS(2-CHLORDISOPROPYL)ETHER	740	Ü	86-73-7	FLUORENE	87	Ĵ
106-44-5	4-METHYLPHENOL	740	U	100-10-6	4-NITROANILINE	3600	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	740	U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3500	U.
67-72-1	HEXACHLORGETHANE	740	U	86-30-6	N-NITROSODIPHENYLAMINE (1)	740	U
98-95-3	NITROBENZENE	740	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	740	U
78-59-1	ISOPHORONE	740	U	118-74-1	HEXACHLOROBENZENE	740	U
88-75-5	2-NITROPHENOL	740	U	87-86-5	PENTACHLOROPHENOL	3600	U
105-67-9	2.4-DIMETHYLPHENOL	740	U	85-01-8	PHENANTHRENE	1100	
65-85-0	BENZOIC ACID	3600	U	120-12-7	ANTHRACENE	300	J
111-91-1	BIS(2-CHLOROETHOXY)METHANE	740	U	84-74-2	DI-N-BUTYLPHTHALATE	740	U
120-83-2	2,4-DICHLOROPHENOL	740	U	206-44-0	FLUORANTHENE	1500	
120-82-1	1.2.4-TRICHLOROBENZENE	740	U	129-00-0	PYRENE	1300	
91-20-3	NAPHTHALENE	740	U	85-68-7	BUTYLBENZYLPHTHALATE	740	U
106-47-8	4-CHLOROANILINE	740	U	91-94-1	3.3'-DICHLOROBENZIDINE	1500	u
87-68-3	HEXACHLOROBUTADIENE	740	U	54-55-3	BENZO(A)ANTHRACENE	740	U
59-50-7	4-CHLORO-3-METHYLPHENOL	740	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	740	U
91-57-6	2-HETHYLNAPHTHALENE	740	U	218-01-9	CHRYSENE	480	J
77-47-4	HEXACHLOROCYCLOPENTADIENE	740	U	117-84-0	DI-N-OCTYL PHTHALATE	740	U
98- <b>06-2</b>	2,4,6-TRICHLOROPHENOL	740	Ü	205-99-2	BENZO(B)FLUORANTHENE		
95-95-4	2.4.5-TRICHLOROPHENOL	3600	U	207-08-9	BENZO(K) FLUORANTHENE 740.	( 404-	-J- W/L
91-58-7	2-CHLORONAPHTHALENE	740	U	50-32-8	BENZO(A)PYRENE	510	J 7/29
88-74-4	2-NITROANILINE	3600	U	193-39-5	INDENO(1,2,3-CD)PYRENE	740	U
131-11-3	DIMETHYL PHTHALATE	1400		53-70-3	DIBENZ(A,H)ANTHRACENE	740	U
208-96-8	ACENAPHTHYLENE	740	U	191-24-2	BENZO(G,H,I)PERYLENE	300	ن
99-09-2	3-NITROANILINE	3600	U				

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

Laboratory Name: ETC-Toxicon Laboratories, Inc. 7410 Case No:

Sample Number AH655

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

[x]-No Yes **GPC** Cleanup Separatory Funnel Extraction

Date Extracted/Prepared: 15-Jul-87

Continuous Liquid-Liquid Extraction

Yes Yes

Date Analyzed: 24-Jul-87

Conc/Dil Factor: Percent Moisture(decanted)

CAS		ug/L or [ug/Kg]
Number		
319-84-6.	Alpha-BHC	45 U
319-85-7	Beta-BHC	45 U
319-86-8	Delta-BHC	
58-89-9	Gamma-BHC (Lindane)	
76-44-B	Heptachlor	
309-00-2	Aldrin	45 U
1024-57-3	Heptachlor Epoxide	
959-98-B	Endosulfan I	
60-57-1	Dieldrin	· 90 U
72-55-9	4,4'-DDE	90 U
72-20-8	Endrin	90 U
33213-65 <b>-</b> 9	Endosulfan II	90 U
72-54-8	4,4'-DDD	
1-31-07-8	Endosulfan Sulfate	90 U
50-29-3	4,4'-DDT	90 U
72-43-5	Methoxychlor	449 U
72- <del>1</del> 3-3 53494-70-5	Endrin Ketone	90 U
57-74-9	Chlordane	449 U
8001-35 <b>-</b> 2	Toxaphene	899 U
12674-11-2	Aroclor-1016	449 U
11104-28-2	Aroclor-1221	· · · · · · · · · · · · · · · · · · ·
11141-16-5	Aroclor-1232	
111 <del>1</del> 1-16-3 53469-21-9	Aroclor-1242	
• • • • • • • • • • • • • • • • • • • •	Aroclor-1248	449 U
12672-29-6	Aroclor-1254	
11097-69-1		899 U
11096-82-5	Aroclor-1260	011

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vs =

or Ws = 1.5

¥t =

5000

Vi = 3.0

Form 1

Sample Number AH 654

-	e Number:	② SAMPLE C	ONCENTRATION (Check One)	-	Ship To:				
: Nr	e Site Name/Code:	bushers Low (	Separation of the Concentration of the Concentration of the Concentration						
∗ <del>१</del> संब	sacrolofis tised to fulfill OC	(Check	Attn. (Check One)						
E02	ding-Organics Laboratory		ediment	j	hip To:				
⑤ Reg Samplii	ional Office (EQSAL) ig Personnel: Procession ignormality of Marine	on each bottle	used and mark v	olume level	Date Rec'd: //s/87 Sample Condition				
	in (hous) space provide (Mame) servide (Mame)	(white copy) to the Hiv							
Sampli	uple sectors to the content of the c	Water (Extractable)	à note comments re	ទែលផ្តល់ជី ឧទ្ធរជាជាន	Mo ice. Samples are approx. 80°F.				
(7) Shir	ping Information	(VOA)	ार्थ प्राचान देशसभू छ	<b>7</b> -2	Superior agree.				
Haraiy Ci.,	SED rate Xiractions	Soil/Sediment (VOA)	2	8 02,					
6 Bull	ame of Carrier and or de		in the openimes on ap-						
	Date Shipped: Meli se ()	÷ अनुदाख्का बाग्राक विश्ववाहत	unnaciotabe MVI s	अक्ष्मेल जिल्हा स्वास	and of Ca				
- <u>283</u>	Parent Annual Content of the Parent of the P	OTR : Organics Labe ronicie Analysis (OLU	story Chionicle-By: At in asl be maked.	प्रकारकार <u>ेर्</u> टाल्ह					
San	nple Description, per	or pench and make su	ा. वृत्त सार् <b>ट</b> ामच् <b>रुटा ।</b>	9 Sample	Location				
ु । ———	Surface:Water: por ear Ground Water	/2013/16/2015/19/2016 Solids	'- <del>-</del>	ioniegose					
	Editorions  Teachate  The moterals provide	Cther (specify)	ereant t	15 15 15 15					
(e.g.,	cial Handling Instructions, hazard								
	- grand mesa gana kan gesh padbahan Kalendanyen bi		FOR RETURN TO SM	0	7410013478				

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAS SAMPLE ID NO: 4182-15

SAMPLE MATRIX:

SOIL

DATA RELEASE AUTHORIZED BY: Warm Lutter

CASE NO: 7410 GC REPORT NO: 741@

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: \$6/15/87

### VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/17/87

1. РΗ

CONC/DIL FACTOR:

12. 0

PERCENT HOISTURE: (NOT DECANTED)

CAS NUMBER	UG/KG	CAS NUMBER	UG/KG
74-87-3 CHLOROMETHANE	11 U	78-87-5 1.2-DICHLOROPROPANE	. 6 U
74-83-9 BROMOMETHANE	ii U	10061-02-6 TRANS-1.3-DICHLOROPROENE	. 6 0
75-01-4 VINYL CHLORIDE	11 U	79-01-6 TRICHLORGETHENE	. 6 U
75-00-3 CHLOROETHANE	11 U	124-48-1 DIBROMOCHLOROMETHANE	. 5 U
75-09-2 METHYLENE CHLORIDE	51 B	79-00-5 1.1.2-TRICHLORDETHANE .	. ខម
67-64-1 ACETONE	5 J	71-43-2 BENZENE	. 6 U
75-15-0 CARBON DISULFIDE	6 U	10061-01-5 CIS-1, 3-DICHLOROPROPENE	. 6 U,
75-35-4 1.1-DICHLOROETHENE	6 U	110-75-8 2-CHLOROETHYLVINYLETHER	. 11 U
75-35-3 1,1-DICHLORGETHANE	6 U	75-25-2 BROMOFORM	. 6/U
156-60-5 TRANS-1, 2-DICHLOROETHENE	6 U	108-10-1 4-METHYL-2-PENTANONE	. 11/U
67-66-3 CHLOROFORM	6 U	591-78-6 2-HEXANONE	. 11 U
107-06-2 1,2-DICHLOROETHANE	6 U	127-18-4 TETRACHLORGETHENE	. 6 U
78-93-3 2-BUTANONE	11 U	79-34-5 1, 1, 2, 2-TETRACHLORGETHAN	E 11 U
71-55-6 1,1,1-TRICHLOROETHANE	6 U	108-88-3 TOLUENE	. 6 U
56-23-5 CARBON TETRACHLORIDE	6 U	108-90-7 CHLOROBENZENE	. ģ_U
108-05-4 VINYL ACETATE	11 U	100-41-4 ETHYLBENZENE	, <u>á</u> u
75-27-4 BROMODICHLOROMETHANE	6 U	100-42-5 STYRENE	. 6 U
12-71-4 SUBJECTION CHARGE		TOTAL XYLENES	. 6 U

- 8 COMPOUND WAS DETECTED IN THE QC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

F

LABORATORY NAME: ETC/TOXICON

CASE NO:

99-09-2

7410

SAMPLE NUMBER AH654

YES

## QRGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW GPC CLEANUP YES X NO

DATE EXTRACTED/PREPARED: 6/5/87 SEPARATORY FUNNEL EXTRACTION YES

DATE ANALYZED: 67/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION

CONC/DIL FACTOR: 1.

PERCENT MOISTURE: (DECANTED) 12.0

CAS NUMBER	<i>,</i> •	UG/K	.G	CAS NUMBER		UG/K	G
108-95-2	PHENOL	37 <b>ø</b>	U	83-32-9	ACENAPHTHENE	370	U
111-44-4	BIS(2-CHLOROETHYL)ETHER	370	U	51-28-5	2,4-DINITROPHENOL	1800	U
95-57-8	2-CHLOROPHENOL	37 <b>0</b>	Ų	100-02-7	4-NITROPHENOL	1800	U
541-73-1	1,3-DICHLOROBENZENE	370	U	132-64-9	DIBENZOFURAN	37₹	U
106-46-7	1,4-DICHLOROBENZENE	370	U	121-14-2	2,4-DINITROTOLUENE	370	U
100-51-6	BENZYL ALCOHOL	370	U	606-20-2	2,6-DINITROTOLUENE	37₹	U
95-50-1	1,2-DICHLOROBENZENE	370	U	84-66-2	DIETHYLPHTHALATE	370	U
75-48-7	2-METHYLPHENOL	37₫	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	370	U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	370	U	86-73-7	FLUORENE	370	U
106-44-5	4-METHYLPHENOL	370	U	100-10-6	4-NITROANILINE	1800	Ų
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	370	Ų	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1500	U
67-72-1	HEXACHLORGETHANE	370	U	86-30-6	N-NITROSODIPHENYLAMINE (1)	370	U
78-95-3	NITROBENZENE	370	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	370	U
78-59-1	ISOPHORONE	370	U	118-74-1	HEXACHLOROBENZENE	370	U
88-75-5	2-NITROPHENOL	370	u	87-86-5	PENTACHLOROPHENOL	1800	U
105-67-9	2,4-DIMETHYLPHENOL	370	U.	85-01-8	PHENANTHRENE	170	J
65-85- <b>0</b>	BENZOIC ACID	1800	Ų.	120-12-7	ANTHRACENE	374	U
111-91-1	BIS(2-CHLORGETHOXY)METHANE	370	Ų	84-74-2	DI-N-BUTYLPHTHALATE	370	U
120-83-2	2,4-DICHLOROPHENOL	370	U	206-44-0	FLUORANTHENE	310	J
120-82-1	1,2,4-TRICHLOROBENZENE	376	U	129-00-0	PYRENE	290	J
91-20-3	NAPHTHALENE	370	U	85-68-7	BUTYLBENZYLPHTHALATE	370	U
196-47-8	4-CHLOROANILINE	370	U	91-94-1	3,3'-DICHLOROBENZIDINE	750	U
87-68-3	HEXACHLOROBUTADIENE	370	U	56-55-3	BENZO(A)ANTHRACENE	37@	U
59-50-7	4-CHLORO-3-METHYLPHENOL .	370	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	140	J
91-57-6	2-METHYLNAPHTHALENE	370	Ų	218-01-9	CHRYSENE	200	J
77-47-4	HEXACHLOROCYCLOPENTADIENE	370	·U	117-84-0	DI-N-OCTYL PHTHALATE	370	U
88-06-2	2,4,6-TRICHLOROPHENOL	370	U	205-99-2	BENZO(B)FLUORANTHENE	230	٤
95-95-4	2,4,5-TRICHLOROPHENOL	1800	U	207-08-9	BENZO(K)FLUORANTHENE	370	Ų
91-58-7	2-CHLORONAPHTHALENE	370	U	50-32-8	BENZO(A)PYRENE	140	J
88-74-4	2-NITROANILINE	1800	U	193-39-5	INOENO(1,2,3-CD)PYRENE	370	U
131-11-3	DIMETHYL PHTHALATE	370	U	53-70-3	DIBENZ(A,H)ANTHRACENE .	370	U
208-94-8	ACENAPHTHYLENE	370	U	191-24-2	BENZO(G,H,I)PERYLENE	370	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . . 1800 U

Laboratory Name: ETC-Toxicon Laboratories, Inc. Case No: 7410

Sample Number AH654

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle.one)
Date Extracted/Prepared: 15-Jul-87
Date Analyzed: 24-Jul-87
Conc/Dil Factor: 5
Percent Moisture(decanted) 0

GPC Cleanup Yes [x]-No
Separatory Funnel Extraction Yes
Continuous Liquid-Liquid Extraction Yes

CAS Number		ug/L or [ug/k	(g]
745 04 (	Alpha-BHC	45 U	
319-84-6	Beta-BHC	45 U	
319-85-7	Delta-BHC	45 U	
319-86-8		45 U	
58-89-9	Gamma-BHC (Lindane)	45 U	
76-44-8	Heptachlor	45 U	
30 <b>9-00-2</b>	Aldrin	45 U	
1024-57-3	Heptachlor Epoxide	45 U	
959-98-8	Endosulfan I	91 U	
60-57-1	Dieldrin	91 U	
72-55-9	4,4'-DDE		
72-20-8	Endrin	91 U	
33213-65-9	Endosulfan II	91 U	
72-54-8	4,4'-DDD	91 U	
1-31-07-B	Endosulfan Sulfate	91 U	
50-29-3	4,4'-DDT	. 91 U	
72-43 <b>-</b> 5	Hethoxychlor	455 U	
53494-70-5	Endrin Ketone	91 U	
57-74-9	Chlordane	455 U	
8001-35-2	Toxaphene	909 U	
12674-11-2	Aroclor-1016	455 U	
11104-28-2	Aroclor-1221	455 U	
11141-16-5	Aroclor-1232	455 U	
53469-21-9	Aroclor-1242	, 455 U	
12672-29-6	Aroclor-1248	455 U	
11097-69-1	Aroclor-1254	MIS <del>-909-U</del>	4900
11096-82-5	Aroclor-1260	909 U	

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

or Ws = 1.5

V5 =

Vt =

5000

 $\forall i = 3.0.$ 



### U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2490 • FTS, 557-2490

Sample Number
AH 653

### ORGANICS' TRAFFIC REPORT

Donding Organics Laboratory  complete the appropriate section of the sample is used to toliffe OC  complete the appropriate section of the sample is the sample	Check One)  Low Concentration  Medium Concentration  Attn  (Check One)  Trans					
© Regional Office: VE/SM. Sampling Personnel.  1204 (Name) 120 - 3000	white sopyl to tac.HW wite gotarfies on ou each pottle	used and mark v	Approx	imate	(1) Analysis Lab: Rec'd by: Date Rec'd: Sample Condition on Receipt (e.g., broken, no ice, Chain-of-Custody, etc.)  M. W. Janplus W.	
Sampling Date: 6 Nuble responded (End)	Water (Extractable) Water (VOA)				approx - 80° F. Custody scal cather paperwal eques.	
Shipping Information	Soil/Sediment (Extractable)	1	80	7.		
6. Relate any problems unapplement of a Chame of Carrier inpactions with the Chamber of Carrier in the Chamber of Carrier in the Chamber of Carrier in the C	Soil/Sediment (VOA)	Colorador Colorador Cymicolomor y Sast col	80	<b>Z</b> ;		
6/12/87	Likeri sepaementer el	che hack of each pa	ie o, dir y	). Hetai	LTC#	
2832004449 comerce	ರ್ಷ-೯೫೯೦ ನೇವಾಲಕ-ಆಚಾಸಿಪಾಗರಾಗ	FFERNORUS & WERENT	karamie inter	ş		
Airbill Number:       Sample Description				<u></u> _	ation	
Surface:Waters for any Ground Water State and Surface Water	imMixed Media se out of terror series _ Solids	वस्त्रम् १५८७ । १५८ (१))	·		<del></del>	
Special Handling Instructions, hazard     (e.g., safety precautions, hazard)						

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-14

SAMPLE MATRIX: SOIL

DATA RELEASE AUTHORIZED BY:

CASE NO: 7418

GC REPORT NO: 7418

CONTRACT NO: 68817148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/17/87

CONC/DIL FACTOR:

1. PH 6.2

PERCENT MOISTURE: (NOT DECANTED) 7.0

CAS NUMBER		UG/K	.G	CAS NUMBER		UG/H	lG
74-87-3	CHLOROMETHANE	11	U	78-87-5	1,2-DICHLOROPROPANE	5	U
74-87-3	BROMOMETHANE	11	U	10061-02-5	TRANS-1, 3+DICHLOROPROENE .	5	U
75-01 <b>-</b> 4	VINYL CHLORIDE	11	U	79-01-6	TRICHLOROETHENE	5	U
75-00-3	CHLOROETHANE	11	υ	124-48-1	DIBROMOCHLOROMETHANE	5	Ų
75-09-2	METHYLENE CHLORIDE	4	ВJ	79-00-5	1,1,2-TRICHLOROETHANE	5	U
67-64-1	ACETONE	11	U	71-43-2	BENZENE	5	บ
75-15-0	CARBON DISULFIDE	5	u	10061-01-5	CIS-1,3-DICHLOROPROPENE	\$	์ ย
75-35-4	1,1-DICHLORGETHENE	5	U	110-75-8	2-CHLOROETHYLVINYLETHER .	11	U
75-35-3	1,1-DICHLORGETHANE	5	U	75-25-2	8ROMOFORM	5	Ü
156-60-5	TRANS-1, 2-DICHLOROETHENE	s	U	108-10-1	4-METHYL-2-PENTANONE	11	U
67-66-3	CHLOROFORM	5	U	591-78-6	2-HEXANONE	11	u
107-06-2	1,2-DICHLOROETHANE	5	U	127-18-4	TETRACHLOROETHENE	5	U
78-93-3	2-BUTANONE	11	U	79-34-5	1,1,2,2-TETRACHLORGETHANE	11	U
71-55-6	1,1,1-TRICHLOROETHANE	5	Ü	108-88-3	TOLUENE	S	IJ
56-23-5	CARBON TETRACHLORIDE	5	U	108-90-7	CHLOROBENZENE	5	IJ
108-05-4	VINVL ACETATE	11	U	100-41-4	ETHYLBENZENE	5	U
75-27-4	BROMODICHLOROMETHANE	- 5	บ	100-42-5	STYRENE	5	υ
,, ,, ,					TOTAL XYLENES	5	U

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO: 7410

SAMPLE NUMBER E 29HA

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

DATE ANALY	CTED/PREPARED: 6/15/87 ZED: 07/15/87				NUP YES X NO RY FUNNEL EXTRACTION YE US LIGUID-LIGUID EXTRACTION		ES
CAS NUMBER		UG/K	G	CAS NUMBER		UG/K	G
108-95-2	PHENOL	35 00	U	83-32-9	ACENAPHTHENE	3500	Ų
111-44-4	815(2-CHLORGETHYL)ETHER	3500	U	51-28-5	2,4-DINITROPHENOL	17000	U
95-57-8	2-CHLOROPHENOL	3500	U	100-02-7	4-NITROPHENOL	17000	บ
541-73-1	1,3-DICHLOROSENZENE	3500	U	132-64-9	DIBENZOFURAN	3500	U
105-46-7	1,4-DICHLOROBENZENE	3500	U	121-14-2	2.4-DINITROTOLUENE	3500	υ
100-51-6	BENZYL ALCOHOL	3500	U	606-20-2	2,6-DINITROTOLUENE	3500	Ü
95-50-1	1,2-DICHLORGBENZENE	3500	U	84-66-2	DIETHYLPHTHALATE	3500	U
95-48-7	2-METHYLPHENOL	2500	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	3500	U
39638-32-9	815(2-CHLORGISOPROPYL)ETHE	R3500	U	86-73-7	FLUORENE	3500	U
106-44-5	4-METHYLPHENOL	3500	บ	100-10-6	4-NITROANILINE	17000	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3500	Ū	534-52-1	4.6-DINITRO-2-METHYLPHENOL	17000	U
67-72-1	HEXACHLOROETHANE	3500	U	86-30-6	N-NITROSODIPHENYLAHINE (1)	3500	u
98-95-3	NITROSENZENE	3500	บ	101-55-3	4-BROMOPHENYL-PHENYLETHER	3500	U
78-59-1	ISOPHORONE	3500	U	118-74-1	HEXACHLOROSENZENE	3500	IJ
88-75-5	2-NITROPHENOL	3500	u	87-86-5	PENTACHLOROPHENOL	17000	U
105-67-9	2,4-DIMETHYLPHENOL	3500	U	85-01-8	PHENANTHRENE	4200	
65-85 <b>-0</b>	BENZOIC ACID	17000	U	120-12-7	ANTHRACENE		J
111-91-1	BIS(2-CHLOROETHOXY)METHANE	3500	U	84-74-2	DI-N-BUTYLPHTHALATE	3500	u
120-83-2	2,4-DICHLOROPHENOL	3500	U	206-44-0	FLUORANTHENE		
120-82-1	1,2,4-TRICHLOROBENZENE	3500	Ü	129-00-0	PYRENE		
91-20-3	NAPHTHALENE	3500	IJ	85-68-7	BUTYLBENZYLPHTHALATE	22000	
106-47-8	4-CHLOROANILINE	3500	บ	91-94-1	3,3'-DICHLOROBENZIDINE		
87-68-3	HEXACHLOROBUTADIENE	3500	U	56-55-3	BENZO(A)ANTHRACENE310		
59-50-7	4-CHLORO-3-METHYLPHENOL .	3500	U	117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	2500	J
91-57-6	2-METHYLNAPHTHALENE	3500	U	218-01-9	CHRYSENE 3700		
77-47-4	HEXACHLOROCYCLOPENTABIENE	3500	U	117-84-0	DI-N-OCTYL PHTHALATE		
88-06-2	2,4,6-TRICHLOROPHENOL	3500	U	205-99-2	BENZO(B)FLUORANTHENE		W
95-95-4	2,4,5-TRICHLOROPHENOL	17000	IJ	207-08-9	BENZO(K) FLUORANTHENE 3500	•	7/:
91-58-7	2-CHLORONAPHTHALENE	3500	U	50-32-8	BENZO(A) PYRENE		J
88-74-4	2-NITROANILINE	17000	U	193-39-5	INDENO(1,2,3-CD)PYRENE	3500	U
131-11-3	DIMETHYL PHTHALATE	35 @@	U	53-70-3	DIBENZ(A,H)ANTHRACENE	3500	U
208-96-8	ACENAPHTHYLENE	3500	U	191-24-2	BENZO(G, H, I) PERYLENE	1200	J
99-09-2	3-NITROANILINE	17000	U				

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

Laboratory Name: ETC-Toxicon Laboratories, Inc.

7410 Case No:

Sample Number AH653

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one) Date Extracted/Prepared: 15-Jul-87

Date Analyzed: 24-Jul-87

Conc/Dil Factor:

5 Percent Moisture(decanted)

[x]~No Yes GPC Cleanup Separatory Funnel Extraction Yes Continuous Liquid-Liquid Extraction Yes

CAS Number		ug/L or [ug/Kg]
319-84-5	Alpha-BHC	43 U
319-85-7	Beta-BHC	43 iJ
319-86-8	Delta-BHC	43 U
58-89-9	Gamma-EHC (Lindane)	1 43 U
75-44-8	Heptachlor	43 U
309-00-2	Aldrin	43 U
1024-57-3	Heptachlor Epoxide	43 U
959-98-8	Endosulfan I	43 U
60-57-1	Dieldrin	86 U
72-55-9	4,4'-DDE	84 N
72-20-8	Endrin	86 N
33213-65-9	Endosulfan II	86 U
72-54-8	4,4'-DDD	85 U
1-31-07-8	Endosulfan Sulfate	86 U
50-29-3	4.4'-DDT	86 U
72-43-5	Methoxychior	430 U
53494-70-5	Endrin Ketone	B6 Ŭ `
57-74-9	Chlordane	430 U
8001-35-2	Toxaphene	840 U
12674-11-2	Aroclor-1016	430 U
11104-29-2	Aroclor-1221	430 U
11141-16-5	Aroclor-1232	430 U
53469-21-9	Aroclor-1242	430 Ü
12672-29-6	Aroclor-1248	430 U
11097-69-1	Aroclor-1254	860 U
11095-82-5	Arcclor-1250	960 U
	Vi = Volume of extract injected (	il)

Vs = Volume of water extracted (ml)

Ws = Weight of sample extracted (g)

Vt = Volume of total extract (ul)

۷s =

or ₩s = 1.5

Vt =

5000

Vi = 3.0

Form I



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Mariag P.O. Box 818, Alexandria, Virginia 22313—703, 557-2490 • FTS / 557-2490 ORGANICS TRAFFIC REPORT

Case Number:  7410  Sample Site Name/Code:	Mediu Mediu	heck One)  To receive the less is  Concentration to  um Concentration	ou Sylving MyX	IPTO: ICON INC IN ROVEE, LA LEE KOD
ponding Organics Laboratory.  The standard conservation of the supprepriate section of the supprepriate section.	(Check C	LATRIX BIX 25 (\$ 5) One)	Trans	sfer To:
Sampling Personnel: apporator.  (Name)	of containers on each bottle	nsed and mark v	Extractions (OLC.	Date/Rec'd:
Sampling Date: 6   1	Water (Extractable) Water (VOA) *4 creeces			Approx 80° P Custody seel entirely paperious Agrees
6. Relate any problems and for que CName of Carrier riple Mai Analys S.D. at X rections. Check concaron of all samples Phibbing Information	Soil/Sediment (VOA)  Soll/Sediment (VOA)  Concerning SM  Other	○ procedures of the	use of OTR's of	
<b>1</b>	e address and phone n r your convenience on	umber of the HWI S the back of each pa	nople Managemer	ore ²
Airbill Number: Hebous  Sample Description, her	OTR), Organics Labo	atörý Chronicle-Éx:	actions (OCL-E)	cation
General Directions  —— Feachate  ) Che unly the materials provided  Quoning Mater  2. Amaignue yourself with all typ  ———————————————————————————————————	Solids  Solids	sstep of you, and All		
Special Handling Instructions, safety precautions, hazard 1900 1904 919		<u>-</u>		

(PAGE 1)

LABORATORY NAME: ETC/TOXICON
LAB SAMPLE ID NO: 4182-13
SAMPLE MATRIX: WATER /

SAMPLE MATRIX: WATER
DATA RELEASE AUTHORIZED BY: Warm Lutell

CASE NO: 7410 OC REPORT NO: 7410

CONTRACT NO: 68017148

-DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/15/87

CONC/DIL FACTOR:

1.

PH NR

PERCENT MOISTURE: (NOT DECANTED) NR

UG/L CAS NUMBER CAS NUMBER UG/L 1,2-01CHLOROPROPANE . . . 78-87-5 74-87-3 CHLOROMETHANE . . . . . . 10 U 10061-02-6 TRANS-1.3-DICHLOROPROENE . 5 74-83-9 BROMOMETHANE . . . . . . . U VINYL CHLORIDE . . . . . . 79-01-6 TRICHLOROETHENE . . . . . U U 75-01-4 10 CHLOROETHANE . . . . . . . . DIBROMOCHLOROMETHANE . . . 5 H 75-00-3 10 U 124-48-1 1,1,2-TRICHLOROETHANE . . 79-00-5 75-09-2 METHYLENE CHLORIDE . . . . 5 U BENZENE . . . . . . . . 5 U 67-64-1 10 u 71-43-2 10061-01-5 CIS-1.3-DICHLOROPROPENE 5 75-15-0 CARBON DISULFIDE . . . . . 5 U 5 U 110-75-8 2-CHLOROETHYLVINYLETHER . 10 75-35-4 75-35**-3** 75-25-2 BROMOFORM . . . . . . . . 5 1,1-DICHLOROETHANE . . . . 5 U 4-METHYL-2-PENTANONE . . . 10 U TRANS-1, 2-DICHLOROETHENE . 5 U 108-10-1 156-60-5 2-HEXANONE . . . . . . . . 10 67-66-3 5 U 591-78-6 1,2-DICHLORDETHANE . . . . 5 U 127-18-4 TETRACHLOROETHENE . . . . 2 107-06-2 10 U 1,1,2,2-TETRACHLOROETHANE 11 78-93-3 2-BUTANONE . . . . . . . . 79-34-5 10 1,1,1-TRICHLOROETHANE . . . 5 U .108-88-3 2 71-55-6 CHLOROBENZENE . . . . . . 5 56-23-5 CARBON TETRACHLORIDE . . . 5 U 108-90-7 27 ETHYLBENZENE . . . . . . . 108-05-4 18 U 100-41-4 5 U STYRENE . . . . . . . 75-27-4 BROMODICHLOROMETHANE . . . 5 U 100-42-5 94 TOTAL XYLENES . . . . . .

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

NR - Not Required

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO:

7410

SAMPLE NUMBER AH652

## ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

CONCENTRAT	TION: LOW			GPC CLEA	ANUP YES X NO		
DATE EXTRA	CTED/PREPARED: 06/15/87			SEPARATO	RY FUNNEL EXTRACTION YES		
DATE ANALY	ZED: 07/24/87			CONTINU	OUS LIQUID-LIQUID EXTRACTION	Y	/ES
CONC/DIL F	FACTOR: 1.						
PERCENT MO	DISTURE: (DECANTED)						
	•				•		
CAS NUMBER		UG/	'L	CAS NUMBER	ł	UG/	
108-95-2	PHENOL	10	IJ	83-32-9	ACENAPHTHENE ,	10	U
111-44-4	BIS(2-CHLOROETHYL)ETHER .	10	U	51-28-5	2,4-DINITROPHENOL	50	U
95-57-8	2-CHLOROPHENOL	10	U	100-02-7	4-NITROPHENOL	50	U
541-73-1	1.3-DICHLOROBENZENE	10	U	132-64-9	DIBENZOFURAN	10	Ų
106-46-7	1,4-DICHLOROBENZENE	10	U	121-14-2	2,4-DINITROTOLUENE	10	U
100-51-6	BENZYL ALCOHOL	18	ប	606-20-2	2,6-DINITROTOLUENE	10	ម
95-50-1	1,2-DICHLOROBENZENE	10		84-66-2	DIETHYLPHTHALATE	10	U
95-48-7	2-METHYLPHENOL	10	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	10	U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	10	IJ	86-73-7	FLUORENE	10	U
106-44-5	4-METHYLPHENOL	10	IJ	100-16-6	4-NITROANILINE	50	U
621-64-7	N-NITROSO-DI-N-PROPYLAHINE	10	IJ	534-52-1	4,6-DINITRO-2-METHYLPHENOL	50	U
67-72-1	HEXACHLORGETHANE	10	U	86-30-6	N-NITROSODIPHENYLAMINE (1)	10	U
98-95-3	NITROBENZENE ,	10	Ū	101-55-3	4-8ROMOPHENYL-PHENYLETHER	10	U
78-59-1	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	10	U
88-75-5	2-NITROPHENOL	10	U	87-86-5	PENTACHLOROPHENOL	50	U
105-67-9	2,4-DIMETHYLPHENOL	10	U	85-01-8	PHENANTHRENE	10	U
65-85-0 T	BENZOIC ACID	50	Ü	120-12-7	ANTHRACENÉ	10	U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	10	U	84-74-2	DI-N-BUTYLPHTHALATE	10	U
120-83-2	2,4-DICHLOROPHENOL	10	บ	204-44-0	FLUORANTHENE	10	U
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	U
91-20-3	NAPHTHALENE	10	U	85-68-7	BUTYLBENZYLPHTHALATE	10	U
106-47-6	4-CHLOROANILINE	10	U	91-94-1	3,3'-DICHLOROBENZIDINE	20	U
87-68-3	HEXACHLOROBUTADIENE	10	U	56-55-3	BENZO(A)ANTHRACENE	10	u
59-50-7	4-CHLORO-3-METHYLPHENOL .	10	Ü	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10	U
91-57-6	2-HETHYLNAPHTHALENE	10	U	218-01-9	CHRYSENE	10	υ
77-47-4	HEXACHLOROCYCLOPENTADIENE	10	U	117-84-0	DI-N-OCTYL PHTHALATE	10	U
88-06-2	2,4,6-TRICHLOROPHENOL	10	Ü	205-99-2	BENZO(B)FLUORANTHENE	10	U
95-95-4	2,4,5-TRICHLOROPHENOL	50	U	207-08-9	BENZO(K)FLUORANTHENE	10	U
91-58-7	2-CHLORONAPHTHALENE	10	Ü	50-32-8	BENZO(A) PYRENE	10	U
88-74-4	2-NITROANILINE	50	U	193-39-5	INGENO(1,2,3-CD)PYRENE	10	Ū
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZ(A, H) ANTHRACENE	10	U
208-96-8	ACENAPHTHYLENE		U	191-24-2	BENZO(G, H, I) PERVLENE	10	IJ.
99-09-2	3-NITROANILINE	50	U	-/1 AT L	was not not a second of the se		_
77-07-4	S-MY CUANTETUE	24	J				

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

Case No:

7410

Sample Number ah652

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

NR

GPC Cleanup

[x]-No Yes

Separatory Funnel Extraction

Continuous Liquid-Liquid Extraction [x] Yes

[uq/L] or ug/Kg CAS Nuaber 0.05 U Aloha-BHC..... 319-84-6 0.05 U Beta-BHC ..... 319-85-7 0.05 U Delta-BHC..... 319-86-8 Gamma-BHC (Lindane) 0.05 U 58-89-9 0.05 U Heptachlor ...... 76-44-8 0.05 U Aldrin ..... 309-00-2 0.05 U Heptachlor Epoxide..... 1024-57-3 0.05 U Endosulfan I 959-98-8 Dieldrin ..... 0.1 U 60-57-1 0.1 U 4.4'-DDE ..... 72-55-9 0.1 U Endrin ..... 72-20-8 0.1 U Endosulfan II ..... 33213-65-9 0.1 U 72-54-8 4.4'-DDD ..... Endosulfan Sulfate..... 0.1 U 1-31-07-8 0.1 U 4.4'-DDT ..... 50-29-3 0.5 U Methoxychlor ...... 72-43-5 0.1 U Endrin Ketone ...... 53494-70-5 0.5 U Chlordane ..... 57-74-9 1 1 Toxaphene ...... 8001-35-2 Aroclor-1016 ..... 0.5 U 12674-11-2 0.5 U Arpclpr-1221 ....... 11104-28-2 0.5 U Aroclor-1232 ..... 11141-16-5 0.5 U Aroclor-1242 ...... 53469-21-9 0.5 U Aroclor-1248 ..... 12672-29-6 1 Ü 11097-69-1 Aroclor-1254 ...... 1 U Arpslor-1260 ........ 11096-82-5 Vi = Volume of extract injected (ul)

or #5 =

1000

Vs .=

Vt =

10000

Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vi = 3.0



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703/557-2490 • FTS/557-2490

Sample Number

ORGANICS TRAFFIC REPORT

Case Number:	② SAMPLE CONCENTRATION (Check One)				Ship To:     \[ \int \OXICOU \Sigma \DX     \]			
Sample Site Name/Code:	Low C	Concentration and Concentration	on.	RATO	n Rove	至,以		
ponding Organics Laboratory.  Sin 14 annula sensed to multi-Oc- complete the appropriate secti	3 - SAMPLE M (Check O	ATRIX pax grape ne)	in septimber in	Trans	Attn: LEE KOD  Transfer Ship To:			
(5) Regional Office VELSM. Sampling Personnel:	6 For each sam	ple collected sp	ecify nu	7P61	(i) Analy Rec'd by			
W6 +	while cupy) to the HW		• • •	imate	Date Rec Sample C on Receip ice, Chain-o	ondition of (e.g., brok f-Custody, e	gc.)	
Sampling Date:	Water (Extractable)		::4°)	teus	sporal	80°F	•	
(Begin) (End) (End)	Soil/Sediment (Extractable)	toy, in 🗨 Paral : - :	-80	للم	papewa	ul Agu	<u>us</u>	
Amaiya San at San	Soil/Sediment (VOA)					· · · · · · · · · · · · · · · · · · ·		
Name of Carrier 45% 989	Other  Other  Other  Shore and a second concerning Shore and concerning the second concerning Shore and second concerning the second	the back of each particle procedures or the	13-14:US (	1115 6nd	OLC's			
2 Date Shipped:	च क्यूटा <b>ल्डर</b> अपने हिं <mark>क्टरा</mark> ल्ड	unbar of the FW.	angle Ka	nemerosk		· · · · · · · · · · · · · · · · · · ·	<del></del>	
. 183250 4442 Airbill Number: Hebru	OFF: Organics Labo contributions OEC	atúry Chronicle-Év Al paust de maiter	r lections (C concine tha	CFE				
Surface Water		यह बोरियोधराप्रशासका	9-San	ple Lo	cation			
Ground Water  Leachate  Grown processes	her of internation (ed): <b>Solids</b>	สโตเหมียามา	1. 15 to					
(e.g., safety precautions, hazar								

Sample Number AHC52 AE

## Organics Analysis Data Sheet (Page 1)

Laboratory Name: ETC/Toxicon	Case No:
Lab Sample ID No:	QC Report No: 7410
Sample Matrix:	Contract No: 68-01-7148  Date Sample Received: 6/15/67
Volatile Co	ompounds
Concentration: Low	Medium (Circle One)
Date Extracted/Prepared:	

Date Analyzed: NO PRACTION ANALYZED

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chioromethane	
74-83-9	Bromomethane	
75-01-4	Vinyl Chloride	
75-00-3	Chloroethane	
75-09-2	Methylene Chloride	
67-64-1	Acetone	
75-15-0	Carbon Disulfide	
75-35-4	1, 1-Dichloroethene	
75-34-3	1, 1-Dichloroethane	
156-60-5	Trans-1, 2-Dichloroethene	
67-66-3	Chloroform	
107-06-2	1, 2-Dichloroethane	
78-93-3	2-Butanone	
71-55-6	1, 1, 1-Trichloroethane	
56-23-5	Carbon Tetrachloride	
108-05-4	Vinyl Acetate	
75-27-4	Bromodichloromethane	

Conc/Dil Factor: _

Percent Moisture: (Not Decanted) ...

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	
10061-02-6	Trans-1, 3-Dichloropropene	
79-01-6	Trichloroethene	
124-48-1	Dibromochloromethane	
79-00-5	1, 1, 2-Trichloroethane	
71-43-2	Benzene	
10061-01-5	cis-1, 3-Dichloropropene	
110-75-8	2-Chloroethylvinylether	
75-25-2	Bromoform	
108-10-1	4-Methyl-2-Pentanone	
591-78-6	2-Hexanone	
127-18-4	Tetrachloroethene	
79-34-5	1, 1, 2, 2-Tetrachloroethane	
108-88-3	Toluene	•
108-90-7	Chlorobenzene	
100-41-4	Ethylbenzene	
100-42-5	Styrene	
	Total Xylenes	

### **Data Reporting Qualifiers**

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

- Value If the result is a value greater than or equal to the detection limit, report the value
  - U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit). The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.
- J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that incets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10.1). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.
- C. This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng 'ul in the final extract should be confirmed by GC/MS.
- 8 This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
- Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

7410013410

В

LABORATORY NAME: ETC/TOXICON

CASE NO:

99-09-2

7410

SAMPLE NUMBER AH652RE

### ORGANICS ANALYSIS DATA SHEET

#### SEMIVOLATILE COMPOUNDS

GPC CLEANUP YES X NO I OM CONCENTRATION: SEPARATORY FUNNEL EXTRACTION YFS DATE EXTRACTED/PREPARED: 07/16/87 VES CONTINUOUS LIQUID-LIQUID EXTRACTION DATE ANALYZED: 07/16/87 CONC/DIL FACTOR: 1. PERCENT MOISTURE: (DECANTED) UG/L CAS NUMBER UG/L CAS NUMBER 10 U ACENAPHTHENE . . . . . . . . 10 U 83-32-9 108-95-2 2,4-DINITROPHENOL 50 U BIS(2-CHLOROETHYL)ETHER . 11 51-28-5 10 111-44-4 U 4-NITROPHENOL . . . . . . U 100-02-7 10 2-CHLOROPHENOL . . . . . . 95-57-8 10 U DIBENZOFURAN . . . . . . . . . 132-64-9 1,3-DICHLOROBENZENE . . . 10 U 541-73-1 U 2,4-DINITROTOLUENE . . . . 10 10 1,4-DICHLOROSENZENE . . . u 121-14-2 106-46-7 10 п 2,6-DINITROTOLUENE . . . . SENZYL ALCOHOL . . . . . . 10 606-20-2 IJ 100-51-6 DIETHYLPHTHALATE . . . . . 10 1,2-DICHLOROBENZENE . . . 7 84-66-2 95-50-1 4-CHLOROPHENYL-PHENYLETHER п 10 10 7005-72-3 2-METHYLPHENOL . . . . . . ш 95-48-7 U 10 84-73-7 10 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER 11 50 U 4-NITROANILINE . . . . . . 10 u 100-10-6 4-HETHYLPHENOL . . . . . . 106-44-5 4, 6-DINITRO-2-METHYLPHENOL 50 f ) 534-52-1 N-NITROSO-DI-N-PROPYLAMINE 10 U 621-64-7 N-NITROSODIPHENYLAMINE (1) 10 HEXACHLOROETHANE . . . . . 86-30-6 10 67-72-1 4-BROMOPHENYL-PHENYLETHER 10 11 101-55-3 98-95-3 NITROBENZENE . . . . . . . 10 11 10 u HEXACHLOROBENZENE . . . . ISOPHORONE . . . . . . . . 118-74-1 10 78-59-1 11 PENTACHLOROPHENOL . . . . 50 87-86-5 10 U 2-NITROPHENOL . . . . . . 88-75-5 10 85-01-8 105-67-9 2,4-DIMETHYLPHENOL . . . . 10 11 44 120-12-7 ANTHRACENE . . . . . . . 10 50 65-85-0 BENZOIC ACIO . . . . . . . DI-N-BUTYLPHTHALATE . . . 10 U BIS(2-CHLOROETHOXY) METHANE U 84-74-2 10 111-91-1 10 11 206-44-0 10 IJ 2,4-DICHLOROPHENOL . . . . 120-83-2 129-00-0 1,2,4-TRICHLOROBENZENE . . 10 U 120-82-1 BUTYLBENZYLPHTHALATE . . . 10 85-68-7 NAPHTHALENE . . . . . . . 10 91-20-3 20 u 91-94-1 3,3'-DICHLOROBENZIDINE . . 106-47-8 4-CHLOROANILINE . . . . . 10 11 BENZO(A)ANTHRACENE . . . . 10 U 56-55-3 HEXACHLOROSUTADIENE . . . 10 87-68-3 IJ BIS(2-ETHYLHEXYL)PHTHALATE 10 117-81-7 4-CHLORO-3-METHYLPHENOL . 10 U 59-50-7 CHRYSENE . . . . . . . . . . . . 2-METHYLNAPHTHALENE . . . 10 218-01-9 91-57-6 DI-N-OCTYL PHTHALATE . . . U HEXACHLOROCYCLOPENTADIENE 10 11 117-84-0 10 77-47-4 BENZO(8) FLUORANTHENE . . . 10 u 205-99-2 10 IJ 2.4.6-TRICHLOROPHENOL . . 88-96-2 BENZO(K)FLUORANTHENE . . . 10 U u 207-08-9 2,4,5-TRICHLOROPHENOL . . 50 95-95-4 BENZO(A) PYRENE . . . . . . 10 2-CHLORONAPHTHALENE . . . 91-58-7 10 U 50-32-8 INDENO(1,2,3-CD)PYRENE . . 10 U 2-NITROANILINE . . . . . . 50 193-39-5 88-74-4 DIBENZ(A, H) ANTHRACENE 10 u 53-70-3 DIMETHYL PHTHALATE . . . . 10 u 131-11-3 10 BENZO(G, H, I) PERYLENE . . . ACENAPHTHYLENE . . . . . . 10 U 191-24-2 208-96-8

50 U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . .



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313 – 703 557-2490 • FTS 557-2490

Sample Number

### ORGANICS TRAFFIC REPORT

Sample Site Name/Code:  Combigue specific specif	(1) Case Number:	② SAMPLE CONCENTRATION (Check One)	_	
Sample Site Name/Code:  Medium Concentration is each to which will be a supplied to combining the substitute of the content of the combining processes and substitute of the content of the combining processes and substitute of the content of the c		a stange Neut Office, retaining the last pa		MICON INC.
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lexandra, Virgilia 22313:	- 200-4306 0 22 224	dous nature)		
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U.S. ENVIRONMENTAL PROTECTION AGENCE LOS ENVIRONMENTAL PROTECTION AGENCAL LOS MASTE LIVES EGATION		MOTION SOUND IN COLUMN		Innibat

(PAGE 1)

ETC/TOXICON LABORATORY NAME: LAB SAMPLE ID NO: 4182-12

SAMPLE MATRIX:

DATA RELEASE AUTHORIZED BY: Warntu Kiff

CASE NO: 7410 GC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZEO:

06/16/87

DIL FACTOR:

PH NR 5.00

NR

PERCENT MOISTURE: (NOT DECANTED)

UG/L CAS NUMBER UG/L CAS NUMBER 1,2-DICHLOROPROPANE . . . 50 U 78-87-5 25 74-87-3 10061-02-6 TRANS-1, 3-DICHLOROPROENE . 50 U 74-83-9 BROMOMETHANE . . . . . . . . . VINYL CHLORIDE . . . . . . . TRICHLOROETHENE . . . . . 79-01-6 75-01-4 50 U CHLOROETHANE . . . . . . . DIBROMOCHLOROMETHANE . . . 25 75-00-3 50 124-48-1 u 75-09-2 METHYLENE CHLORIDE . . . . В J 79-00-5 1,1,2-TRICHLOROETHANE . . 25 240 71-43-2 25 11 67-64-1 CARBON DISULFIDE . . . 10061-01-5 CIS-1, 3-DICHLOROPROPENE . 25 u 25 U 75-15-0 1,1-DICHLOROETHENE . . . . 25 110-75-8 2-CHLOROETHYLVINYLETHER . 50 U 75-35-4 U 1,1-DICHLOROETHANE . . . . 25 75-35-3 25 11 75-25-2 BROMOFORM . . . . . . . . . TRANS-1, 2-DICHLOROETHENE . 25 108-10-1 4-METHYL-2-PENTANONE . . . 156-60-5 2-HEXANONE . . . . . . . . . CHLOROFORM . . . . . . . . 591-78-6 25 U 50 67-66-3 127-18-4 107-06-2 1,2-DICHLOROETHANE . . 25 U 25 78-93-3 2-BUTANONE . . . . . . . . 5@ U 79-34-5 1, 1, 2, 2-TETRACHLOROETHANE 71-55-6 1,1,1-TRICHLORDETHANE . . 25 U 108-88-3 TOLUENE . . . . . . . . . 25 u 56-23-5 CARBON TETRACHLORIDE . . . 25 U 108-90-7 CHLOROBENZENE . . . . . . VINYL ACETATE . . . . . 100-41-4 25 108-05-4 50 U BROMODICHLOROMETHANE . . . 25 100-42-5 STYRENE . . . 25 75-27-4 U TOTAL XYLENES

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED NR - Not Required VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

B

LABORATORY NAME: ETC/TOXICON

CASE NO:

CONCENTRATION:

99-09-2

7410

LOW

SAMPLE NUMBER AH651

YES X NO

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

GPC CLEANUP

SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: 06/15/87 CONTINUOUS LIGUID-LIQUID EXTRACTION YES 07/24/87 DATE ANALYZED: 10.0 DIL FACTOR: PERCENT MOISTURE: (DECANTED) UG/L CAS NUMBER UG/L CAS NUMBER 100 ACENAPHTHENE 83-32-9 108-95-2 500 11 2.4-DINITROPHENOL . . . BIS(2-CHLOROETHYL)ETHER . . 100 51-28-5 111-44-4 500 .0 4-NITROPHENOL . . . . . . 100-02-7 100 U 2-CHLOROPHENGL . . . . . 95-57-8 100 U 132-64-9 100 1,3-DICHLOROSENZENE . . . 541-73-1 2,4-DINITROTOLUENE . . . . . 100 121-14-2 1.4-DICHLOROBENZENE . . . 100 U 106-46-7 2,6-DINITROTOLUENE . 100 11 BENZYL ALCOHOL . . . . . . 606-20-2 100-51-6 DIETHYLPHTHALATE . . . . . . 100 84-66-2 100 1,2-DICHLOROSENZENE . . U 95-50-1 4-CHLOROPHENYL-PHENYLETHER 100 11 7005-72-3 2-METHYLPHENOL . . . . . . 100 Ų 95-48-7 U 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER 100 u 84-73-7 U 500 100-10-6 4-METHYLPHENOL 106-44-5 4,6-DINITRO-2-METHYLPHENOL 500 U 534-52-1 N-NITROSC-DI-N-PROPYLAMINE 100 U 621-64-7 100 U N-NITROSODIPHENYLAMINE (1) 86-30-6 HEXACHLOROETHANE . . . . . 100 U 67-72-1 4-BROMOPHENYL-PHENYLETHER U 101-55-3 100 U 98-95-3 NITROBENZENE . . . . . . . 100 · U HEXACHLOROBENZENE . . . . 118-74-1 100 U 78-59-1 PENTACHLOROPHENOL . . . . 500 u 87-86-5 2-NITROPHENOL . . . . . . U 100 88-75-5 100 Ħ 100 U 85-01-8 2,4-DIMETHYLPHENOL . . . . 105-67-9 ANTHRACENE . . . . . . . . . . 100 U 500 120-12-7 45-85-0 100 DI-N-BUTYLPHTHALATE . . . BIS(2-CHLOROETHOXY)METHANE 84-74-2 100 11 111-91-1 100 U FLUORANTHENE 206-44-0 2,4-DICHLOROPHENOL . . . . 120-83-2 100 U 129-00-0 PYRENE . . . . . . . . . . . . 100 1,2,4-TRICHLOROBENZENE . . 120-82-1 100 BUTYLBENZYLPHTHALATE . . . 85-68-7 160 U NAPHTHALENE 91-20-3 3,3'-DICHLOROBENZIDINE .... 200 91-94-1 100 u 106-47-8 4-CHLOROANILINE . . . . . BENZO(A)ANTHRACENE . . . 100 56-55-3 100 11 HEXACHLOROBUTADIENE . . . 87-48-3 BIS(2-ETHYLHEXYL) PHTHALATE 100 IJ 117-81-7 4-CHLORO-3-METHYLPHENOL . 100 59-50-7 100 218-01-9 2-METHYLNAPHTHALENE . . 100 u 91-57-6 100 DI-N-OCTYL PHTHALATE . . . HEXACHLOROCYCLOPENTADIENE 100 117-84-0 77-47-4 BENZO(B)FLUORANTHENE . . . 100 205-99-2 100 U 2,4,6-TRICHLOROPHENOL . . 88-06-2 BENZO(K)FLUORANTHENE . . 100 2,4,5-TRICHLOROPHENOL . . 207-08-9 500 95-95-4 100 u BENZO(A) PYRENE . . . . . . . 50-32-8 2-CHLORONAPHTHALENE . . . 100 91-58-7 100 INDENO(1, 2, 3-CD) PYRENE . . 2-NITROANILINE . . . . . . . . 500 U 193-39-5 88-74-4 DIBENZ(A.H)ANTHRACENE . . 100 53-70-3 100 DIMETHYL PHTHALATE . . . . 131-11-3 BENZO(G.H.I) PERYLENE . . . 100 191-24-2 ACENAPHTHYLENE . . . . . . 100 Ш 268-96-8

500

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . .

Case No:

7410

Sample Number ah551

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

NR

[x]-No GPC Cleanup Yes Separatory Funnel Extraction

[x] Yes Continuous Liquid-Liquid Extraction

Yes

[ug/L] or ug/Kg CAS Number 0.05 U Alpha-BHC..... 319-84-6 0.05 U Beta-BHC ..... 319-85-7 0.05 U Delta-BHC..... 319-86-8 0.05 U Gamma-BHC (Lindane) 58-89-9 Heptachlor ..... 0.05 U 76-44-B 0.05 U Aldrin ...... 309-00-2 Heptachlor Epoxide..... 0.05 U 1024-57-3 0.05 U Endosulfan I 959-98-B 0.1 U Dieldrin ...... 60-57-1 4.4'-DDE ..... 0.1 1 72-55-9 0.1 8 Endrin ..... 72-20-8 0.1 0 Endosulfan II ..... 33213-65-9 0.1 U 4.4'-DDD 72-54-8 0.1 U Endosulfan Sulfate..... 1-31-07-8 0.1 11 4.4'-DDT ...... 50-29-3 0.5 U Methoxychlor ..... 72-43-5 0.1 U Endrin Ketone ..... 53494-70-5 0.5 U Chlordane ..... 57-74-9 Toxaphene ..... 1 1 8001-35-2 0.5 U Aroclor-1016 ..... 12674-11-2 0.5 U Arorlor-1221 ..... 11104-28-2 0.5 U Aroclor-1232 ..... 11141-16-5 Aroclor-1242 ..... 0.5 U 53469-21-9 0.5 U Aroclor-1248 ....... 12672-29-6 Aroclor-1254 ..... 1 U 11097-69-1 1 U Aroclor-1260 ..... 11096-82-5

> Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml)

Ws = Weight of sample extracted (g)

Vt = Volume of total extract (ul)

Vt = 10000 or Ws = . Vs = 1000

Form !

Vi = 3.0



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2490 • FTS 557-2493

Sample Number

AH 650

7410013302

## ORGANICS TRAFFIC REPORT

) Case Number:	(2) SAMPLE C		ON GO SH	ib to:	
TU-5410=5		heck One)	50	(ICDI) SIK	· = ·
Samble Site Name/Code:  Upon completion of extraction of the On Che to the HWI Samp	biebsie <u>************************************</u>	Concentration is in Concentration	on and brain of BEN	on robe	LA
f chimplese the alternative is seen	te cu son the parect.  (3 & SAMPLEM (Check C	ATRIX parame	Janics Lab :a Vitu	LEE KIS	5)
Honquid Cithanica (Sipeligrap)	the children cover comparison		Trans		<u> </u>
2 Sampling Bersquing Laboratory	Chroi containers in the year of containers in the year had bottle	boratory Chronicie reeq and mark A	Extractions OEC-	(I) Analysis L. Rec'el by Date Rec'el by Sample Condion Receipt (e.g. ice, Chain-of-Cust	tion , broken, no
conquiphone) stoce broxider  Ling impossion sources see in  Sampling Date:	Water (Extractable) [⊟] ***			no cie. san piere approx Custody se	C 80°F
(Bediti) Hic Report (OTR (End) are a	Water (VOA) no a discussive Cost (Sodilar cost	dy, unmeritately co	<del>4. 9 </del>	paperwark	
Shipping Information	Soil/Sediment (Extractable)		802.		
Analys 150 at Anrections	Soil/Sediment (VOA)	2	802.		· ·
6. Relate any problems are for que <b>(Name of Cartier</b> mple Mar	Other String Siv	D procedures or the			
5/ Tix Date Slipbeds well as the	e eddress and phone nor your convenience on				
383322ALLA Notatory C	roncie Anarysis (OLO dressee	मिं। must be mailed.)	ल श्रमाक ग्रमवा वस्		
* M. Airbill Number: Hebour	(OTR), Organics Labor	etory Chronicie-Ex	actions (OCL-E)		
Sample Description Factor  Surface Water for each	Mixed Media		(2017) (2017) (2017)	cation	
2. Fannianse yourself with all ty	Solids		प्रक्राह	•	•
General Directions  Teachate  Use only the malerials provides	to record as page into	zaproje.		· · · · · · · · · · · · · · · · · · ·	
Hazardous Waste Investigate Sample Management Office P.O. Box 618 Fexandra, Vinginia 22613 (e.d. safeth biccantious passard	ou <u>s natūr</u> e)				

LAB COPY FOR RETURN TO SMO

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-11

SAMPLE MATRIX:

SOIL

DATA RELEASE AUTHORIZED BY: Worn Lu XIII

CASE NO: GC REPORT NO: 7410 CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

**06/17/87** 

CONC/DIL FACTOR:

1.

PH 6.10

PERCENT MOISTURE: (NOT DECANTED)

CAS NUMBER		UG/H	G	CAS NUMBER		UG/K	G
74-87-3	CHLOROMETHANE	15	Ü	78-87-5	1,2-DICHLOROPROPANE	7	ีย
74-83-9	BROMOMETHANE	15	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	7	U
75-01-4	VINYL CHLORIDE	15	U	79-01-6	TRICHLOROETHENE	7	Ü
75-00-3	CHLOROETHANE	15	U	124-48-1	DIBROMOCHLOROMETHANE	7	IJ
75-09-2	METHYLENE CHLORIDE	50		79-00-5	1,1,2-TRICHLOROETHANE	7	U
67-64-1	ACETONE	10	J	71-43-2	BENZENE	7	Ü
75-15-0	CARBON DISULFIDE	7	Ü	10061-01-5	CIS-1,3-DICHLOROPROPENE .	7	U
75-35-4	1,1-DICHLOROETHENE	7	Ü	110-75-8	2-CHLOROETHYLVINYLETHER .	15	U
75-35-3	1,1-DICHLOROETHANE	7	U	75-25-2	BROMOFORM	7	U
156-69-5	TRANS-1, 2-DICHLOROETHENE	7	U	108-10-1	4-METHYL-2-PENTANONE	15	U
57-66-3	CHLOROFORM	7	Ü	591-78-6	2-HEXANONE	15	U
107-06-2	1.2-DICHLOROETHANE	7	U	127-18-4	TETRACHLOROETHENE	7	U
78-93-3	2-BUTANONE	15	U	79-34-5	1,1,2,2-TETRACHLORDETHANE	15	U
71-55-6	1.1.1-TRICHLOROETHANE	7	u.	108-88-3	TOLUENE	7	U
56-23-5	CARBON TETRACHLORIDE	7	ū	108-90-7	CHLOROBENZENE	7	u
108-05-4	VINYL ACETATE	15	U	100-41-4	ETHYLBENZENE	7	U
75-27-4	BROMODICHLOROMETHANE	7	U	100-42-5	STYRENE	7	U.
, , <u>,</u> , , — <del>,</del>		,			TOTAL XYLENES	7	U

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING GUALIFIERS.

U. - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

LABORATORY NAME: ETC/TOXICON

CASE NO:

7410

SAMPLE NUMBER AH650

## ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

CONCENTRAT DATE EXTRA DATE ANALY	CTED/PREPARED: 6/15/67				RY FUNNEL EXTRACTION YES	YES
CONC/DIL F	ACTOR: 1.					
	ISTURE: (DECANTED) 32.0			•	•	
			_		UG/	K G
CAS NUMBER		UG/K		CAS NUMBER 83-32-9	ACENAPHTHENE 490	
108-95-2	PHENOL BIS(2-CHLOROETHYL)ETHER	490	U	51-28-5	2,4-DINITROPHENOL 2400	
111-44-4 95-57-8	2-CHLOROPHENOL	490	U	100-02-7	4-NITROPHENOL 2400	Ū
95-5/-8 541-73-1	1,3-DICHLOROSENZENE	490	u	132-64-9	DIBENZOFURAN 490	
105-46-7	1,4-DICHLOROSENZENE	490	u	121-14-2	2,4-DINITROTOLUENE 498	U
100-51-6	BENZYL ALCOHOL	490	U	606-20-2	2.6-DINITROTOLUENE 498	U
95-50-1	1,2-OICHLOROBENZENE	490	ŭ.	84-66-2	DIETHYLPHTHALATE 490	U
75-48-7	2-METHYLPHENOL	490	u	7005-72-3	4-CHLOROPHENYL-PHENYLETHER 498	U
	BIS(2-CHLOROISOPROPYL)ETHER		U	86-73-7	FLUORENE 490	U
106-44-5	4-METHYLPHENOL		U	100-10-6	4-NITROANILINE 2400	u
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	498	U	534-52-1	4,6-DINITRO-2-METHYLPHENOL 2400	U
67-72-1	HEXACHLOROETHANE	490	U	86-36-6	N-NITROSODIPHENYLAMINE (1) 490	
98-95-3	NITROBENZENE	490	U	101-55-3	4-BROMOPHENYL-PHENYLETHER 498	U
78-59-1	ISOPHORONE	490	U	118-74-1	HEXACHLOROBENZENE 490	U
88-75-5	2-NITROPHENOL	490	U	87-86-5	PENTACHLOROPHENOL 2466	U
105-67-9	2,4-DIMETHYLPHENOL	490	U	8501-8	PHENANTHRENE 490	U
65-85-8	BENZOIC ACID	2400	U	120-12-7	ANTHRACENE 490	U
111-91-1	BIS(2-CHLOROETHOXY) HETHANE	490	U	84-74-2	DI-N-BUTYLPHTHALATE 490	ı u
120-83-2	2,4-DICHLOROPHENOL	490	U	206-44-0	FLUORANTHENE 490	U
120-82-1	1,2,4-TRICHLOROBENZENE	498	U	129-00-0	PYRENE 490	U
91-20-3	NAPHTHALENE	490	U	85-68-7	BUTYLBENZYLPHTHALATE 490	U
106-47-8	4-CHLOROANILINE	490	U	91-94-1	3.3'-DICHLOROBENZIDINE 970	U
87-68-3	HEXACHLOROSUTADIENE	490	U	56-55-3	BENZO(A)ANTHRACENE 490	· U
59-50-7	4-CHLORO-3-METHYLPHENOL .	498	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE 490	_
91-57-6	2-METHYLNAPHTHALENE	490	บ	218-01-9	CHRYSENE 496	
77-47-4	HEXACHLOROCYCLOPENTADIENE	490	U	117-84-0	OI-N-OCTYL PHTHALATE 490	
88-06-2	2.4.6-TRICHLOROPHENOL	498	U	205-99-2	BENZO(8)FLUORANTHENE 498	
95-95-4	2,4,5-TRICHLOROPHENOL	2400	U	207-08-9	BENZO(K)FLUORANTHENE 490	
91-58-7	2-CHLORONAPHTHALENE	490	U	50-32-8	BENZO(A) PYRENE 490	
88-74-4	2-NITRGANILINE	2400	U	193-39-5	INDENO(1,2,3-CD)PYRENE 490	Ų
131-11-3	DIMETHYL PHTHALATE	490	U	53-70-3	DIBENZ(A,H)ANTHRACENE 490	-
208-96-8	ACENAPHTHYLENE	490	U	191-24-2	BENZO(G, H, I) PERYLENE 496	U
	- 44000044171 7412	0400	4.4			

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . 2400 U

Laboratory Name: ETC-Toxicon Laboratories, Inc. Case No:

7410

Sample Number AH650

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one) Date Extracted/Prepared: 15-Jul-87 Date Analyzed: 24-Jul-87 5 Conc/Dil Factor:

Percent Moisture(decanted)

0

[x]-No GPC Cleanup Yes Yes Separatory Funnel Extraction Yes Continuous Liquid-Liquid Extraction

CAS	٠	ug/L or [ug/Kg]
Number		
319-84-6	Alpha-BHC	59 U
319-85-7	Reta-BHC	59 U
319-86-8	Delta-BHC	59 U
58-89-9	Gamma-BHC (Lindane)	59 U
76-44-8	Heptachlor	59 U
309-00-2	Aldrin	59 U
1024-57-3	Heptachlor Epoxide	5 <del>9</del> U
959-98-8	Endosulfan I	59 U
60-57-1	Dieldrin	119 U
72-55-9	4.4'-DDE	118 U
72-20-8	Endrin	118 U
33213-65-9	Endosulfan II	118 U 🔍
72-54-8	4,4'-DDD	118 U
1-31-07-8	Endosulfan Sulfate	118 U
50-29-3	4,4'-DDT	118 U
72-43-5	Methoxychlor	
53494-70-5	Endrin Ketone	118 U
57-74 <b>-</b> 9	Chlordane	588 U
B001-35-2	Toxaphene	1176 U
12674-11-2	Aroclor-1016	
11104-28-2	Aroclor-1221	588 U
11141-16-5	Aroclor-1232	588 U
53469-21-9	Arotlor-1242	588 U
12672-29-6	Aroclor-1248	588 U
11097-69-1	Aroclor-1254	HIS #176 # 9300
11096-82-5	Aroclor-1260	1176 U

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

or #s = 1.5 Vs =

Vt = 5000 Vi = 3.0



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2490 • FTS 557-2490

AH 649

7 3 WG 145					
Case Number:	② SAMPLE CO	ONCENTRATIO	ON (	4 Shi	p To:
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8 Apon completion of extraction		ım Concentratio		"ITTL	ON ROUGE, LA
Sample Site Name/Code:			•		•
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					M Anal-in VIII
5 Regional Office: EXXIV	6 For each sam	ple collected sp	ecity min	aber	(I) Analysis and
Sampling Personnel: Papers (CL)	Curof containers	ised and mark v	olume lev	rel pe:	Rec'd by: flaffife
5. Transfer to the Sample Number	po on each bottle	rioratory Chronicles	Extractions	OFG.	Date Rec'd: 24/5/87
115.5				•	Sample Condition
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4 Send ( (Jame) Less of the OTE	white court to the HW	Sanivamper of	Total Va	ma	ice, Chain-of-Custody, etc.)
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condinate the condition of the condition	Water	gole <b>U</b> ngulence is	பலி		The Ice, Organs
Sampling Date:	(Extractable)	The Control of the Co	اللا آ	Ums	DIEN CROIDE BOOF
6 ((tobie interiodal 6 (Vouzon	Water				11/10/1:
(Bedit) 146 Report (OTR (Eug) pres	(VOA)	ica Malender (fun 'Aoc	S) and	V.	Costod Dark Mact
(Begin) In Straw (OTR(Frid)		<b>♂</b> \	JU 11		produce agrees
Shinning Information	Soil/Sediment				
Check condition of all samples Spribbing Information	(Extractable)				
	Soil/Sediment				
Analy Dos X Directions	(VOA)				
Name of Camerupe No	1 N = 2	KENOVO*	;		
5. Relate any problems and/orty	Office. 3: 2: American cerning SM	D procedures or the	use at CTF	/a or	
6/12/27					
	a vour convenience or	the back of each ye	<u>းော ဃမ် () (</u>	Fis and	DFC.s
2 LPDate Shipped: Min 32 1	e address and phone :	umber of the HWI S	ample Stan	ಇಡಿಡಬ್ ಅಭ	
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283224447	dressee.	á		 <del></del> .	
- SECONDARY CONTRACTOR	ग्रुपार्टक्स्मग्रवाष्ट्रवड (OLC	a) must no <b>m</b> aded .	ासस्य कर्माण्याः विकास सम्बद्धाः	7,1 	
4 MAirbill Number: Hebour	OTRI, Organics Labo	l vian'i Critonicle- <u>Eu</u> r	amioni (Of	ur Ted	
	<u> </u>	<u> </u>			
8 Sample Description	r di Berion aprovince e e	ie ga micomatania e.	(9) Sam	ole Loc	ation
Section of the sectio	ം പം <b>ഉത്തായ</b> ം വേണ്ടായില് വേ	and the second second second second second second			
Surface Water: per ear	Mixed Media	:	· ·		· ·
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Leachate	Other (specify)_				·
General Directions			1		
		<u></u>	<u> </u>		
M Special Handling Instru		•			•
(e.g., safety precautions, hazar	dous nature)				
Alexandria, Volgánia 286,13					
PO Box 818	•	.* *		7 1	1001000
Sample Management Office				6 4	10013268
Hagardous Waste Investigan	OU .			•	

COECH LAB COPY FOR RETURN TO SMO

(PAGE 1)

ETC/TOXICON LABORATORY NAME:

LAB SAMPLE ID NO: 4182-10

SAMPLE HATRIX:

WATER

DATA RELEASE AUTHORIZED BY: Warn Lu

CASE NO: 7410

QC REPORT NO: 7410 CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: @6/15/87

NR

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

@6/16/87

5. 00 РH

DIL FACTOR:

PERCENT MOISTURE: (NOT DECANTED)

NR

CAS NUMBER		UG/	L	CAS NUMBER	·	UG	/L
74-87-3	CHLOROMETHANE	50	U	78-87-5	1,2-DICHLOROPROPANE	25	U
74-83-9	BROMOMETHANE	50	U	10061-02-6	TRANS-1, 3-DICHLOROPROENE .	25	U
75-01-4	VINYL CHLORIDE	50	U	79-01-6	TRICHLOROETHENE	25	Ų
75-00-3	CHLOROETHANE	50	Ü	124-48-1	DIBROMOCHLOROMETHANE	25	U
75-09-2	METHYLENE CHLORIDE	7	J	79-00-5	1,1,2-TRICHLORGETHANE	25	U
67-64-1	ACETONE	190		71-43-2	BENZENE	25	U
75-15-0	CARBON DISULFIDE	25	U	10061-01-5	CIS-1,3-DICHLOROPROPENE	25	U
75-35-4	1,1-DICHLOROETHENE	25	U	110-75-8	2-CHLOROETHYLVINYLETHER	50	U
75-35-3	1,1-DICHLOROETHANE	25	U	75-25-2	BROMOFORM	25	U
156-60-5	TRANS-1, 2-BICHLOROETHENE .	25	U	108-10-1	4-METHYL-2-PENTANONE	50	υ
67-66-3	CHLOROFORM	25	U	591-78-6	2-HEXANONE	50	
107-06-2	1,2-DICHLOROETHANE	25	U	127-18-4	TETRACHLOROETHENE	25	
78-93-3	2-BUTANONE	50	U	79-34-5	1,1,2,2-TETRACHLORGETHANE	50	
71-55-6	1,1,1-TRICHLOROETHANE	25	Ų	108-88-3	TOLUENE	22	
56-23-5	CARBON TETRACHLORIDE	25	U	108-90-7	CHLOROSENZENE		J
108-05-4	VINYL ACETATE	50	U	100-41-4	ETHYLBENZENE		540
75-27-4	BROMODICHLOROMETHANE	25	IJ	100-42-5	STYRENE	25	Ü
					TOTAL XYLENES	780	

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

NR-Not Required DTC 6/16/87

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

8

LABORATORY NAME: ETC/TOXICON

CASE NO:

CONCENTRATION:

208-96-9

99-09-2

7410

LOW

SAMPLE NUMBER AH649

YES X NO

## ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

GPC CLEANUP

VES SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: 96/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION (YES BATE ANALYZED: 07/17/87 5.00 DIL FACTOR: PERCENT MOISTURE: (DECANTED) UG/L CAS NUMBER UG/L CAS NUMBER 58 9 PHENOL . . . . . . . . . . . . 2000 83-32-9 108-95-2 2,4-DINITROPHENOL . . . . BIS(2-CHLORGETHYL)ETHER . 50 51-28-5 111-44-4 750 L 4-NITROPHENOL . . . . . . 50 l F 100-02-7 2-CHLOROPHENOL . . . . . . 95-57-8 U DIBENZOFURAN . . . . . . . . . 50 1,3-DICHLOROBENZENE . . . 50 u 132-64-9 541-73-1 5.0 2,4-DINITROTOLUENE . . . . . 1,4-DICHLOROBENZENE . . . 50 121-14-2 106-46-7 2,6-DINITROTOLUENE . . . . SA U 50 A8A-28-2 BENZYL ALCOHOL . . . . . 11 100-51-6 DIETHYLPHTHALATE . . . . . . U 84-66-2 ·1,2-DICHLOROBENZENE . . . 50 95-50-1 50 11 7005-72-3 4-CHLOROPHENYL-PHENYLETHER u 50 95-48-7 50 U 50 86-73-7 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER 25@ u 4-NITROANILINE . . . . . . 100-10-6 5.0 u 106-44-5 4-METHYLPHENOL . . . . . . 4. A-DINITRO-2-METHYLPHENOL 50 U 534-52-1 621-64-7 N-NITROSO-DI-N-PROPYLAMINE 50 u N-NITROSODIPHENYLAMINE (1) 86-38-6 HEXACHLOROETHANE . . . . . . . . 50 U 67-72-1 u 4-BROMOPHENYL-PHENYLETHER 50 U 101-55-3 98-95-3 ប 50 118-74-1 HEXACHLOROBENZENE . . . . . ISOPHORONE . . . . . . . . 50 78-59-1 u 87-86-5 PENTACHLOROPHENOL . . . . 250 50 88-75-5 2-NITROPHENOL U PHENANTHRENE 50 2,4-DIMETHYLPHENOL . . . . 85-81-8 50 105-67-9 ANTHRACENE . . . . . . . . 50 11 120-12-7 BENZOIC ACID . . . . . . . 250 11 65-85-0 DI-N-BUTYLPHTHALATE . . . 50 U 84-74-2 BIS(2-CHLORGETHOXY) METHANE 50 111-91-1 U 50 50 11 204-44-6 120-83-2 2,4-DICHLOROPHENOL . . . . U 50 U 129-68-6 120-82-1 1,2,4-TRICHLOROBENZENE . . BUTYLBENZYLPHTHALATE . . . 50 u U 85-68-7 NAPHTHALENE . . . . . . . 50 91-20-3 3, 3'-DICHLOROBENZIDINE . . 100 U 50 U 91-94-1 106-47-8 4-CHLOROANILINE . . . . . u BENZO(A)ANTHRACENE . . . . 50 50 U 56-55-3 HEXACHLOROBUTADIENE . . . 87-68-3 50 u 117-81-7 BIS (2-ETHYLHEXYL) PHTHALATE 4-CHLORO-3-METHYLPHENOL . 58 u 59-50-7 U CHRYSENE . . . . . . . . . . . 50 50 U 218-01-9 2-HETHYLNAPHTHALENE . . . 91-57-6 DI-N-OCTYL PHTHALATE . . . 50 u 50 117-84-0 HEXACHLOROCYCLOPENTADIENE 11 77-47-4 BENZO(B)FLUORANTHENE . . . 50 205-99-2 2.4.6-TRICHLOROPHENOL . . 50 88-06-2 50 U BENZO(K)FLUORANTHENE . . . 287~88~9 95-95-4 2,4,5-TRICHLOROPHENOL . . 250 u BENZO(A) PYRENE . . . . . . . . U 50-32-8 2-CHLORONAPHTHALENE . . . 50 U 91-58-7 INDENO(1,2,3-CD) PYRENE . . 50 IJ 193-39-5 250 U 88-74-4 50 U DIBENZ(A, H) ANTHRACENE . . 50 U 53-70-3 DIMETHYL PHTHALATE . . . . . 131-11-3

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

, ACENAPHTHYLENE . . . . . . . .

3-NITROANILINE

FORM I

191-24-2

58 U

250 U

BENZO(G, H, I) PERYLENE . . .

50

Sample Number ah649

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

NR

GPC Cleanup Separatory Funnel Extraction [x]-No

Continuous Liquid-Liquid Extraction [x] Yes

Yes

[ug/L] or ug/Kg CAS Number Alpha-BHC..... 0.05 U 319-84-6 0.05 U Beta-BHC ..... 319-85-7 0.05 U Delta-RHC..... 319-86-81 0.05 U 58-89-9 Gamma-BHC (Lindane) ..... 0.05 ម Heptachlor ..... 76-44-8 0.05 U Aldrin ..... 309-00-2 0.05 U Heptachlor Epoxide..... 1024-57-3 Endosulfan I ..... 0.05 U 959-98-8 0.1 U Dieldrin ..... 60-57-1 4,4 -DDE ..... 0.1 U 72-55-9 0.1 0 Endrin ..... 72-20-B 0.1 U Endosulfan II ..... 33213-65-9 0.1 U 4.4'-DDD ..... 72-54-B 0.1 U Endosulfan Sulfate..... 1-31-07-8 0.1 8 4,4:-DDT ..... 50-29-3 0.5 U Methoxychlor ..... 72-43-5 0.1 U Endrin Ketone ..... 53494-70-5 0.5 U Chlordane ..... 57-74-9

Toxaphene .....

Aroclor-1016 ..... Aroclor-1221 .....

Arpclor-1232 .....

Aroclor-1242 ......

Aroclor-1248 .....

Aroclor-1254 .....

Aroclor-1260 ......

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

Vs =

8001-35-2

12674-11-2

11104-28-2

11141-16-5

53469-21-9

12672-29-6

11097-69-1

11096-82-5

1000

or #s =

Vt =

10000

1.U

0.5 U

0.5 U

0.5 U

0.5 U

0.5 U

10.

1 0

Vi = 3.0

## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313 -703 557-2493 • FTS 557-2493

AH 648

### ORGANICS TRAFFIC REPORT

Case Number:	② SAMPLE CO	ONCENTRATIO	ON A Sh	p To:
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Sample Site Name/Code:		ım Concentratio	on The	DN ROUGE, LA
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A THE STATE STREET STREET OF	3 te SAMPLE M	IATRIX magbine	analysis	
ponding Organics Saboratory	Tromate Avns - 27/0	TO ÉY	Trans	Ī
E Present the grant of the state of the stat	ation, recording 2011\2	equuent uranieudimation o	THE CON Ship	lo:
⑤ Regional Office NEPSAP	6 For each sam	ple collected sp	ecify number	(I) Analysis Lab:
Sampling Personnel spoistory	of containers	used and mark v	olume level per	Rec'd by
Tenst ento toe Sample Number	"on each bottle	coratory Chronicle.	Extractions (OT.C.*	Date Rec d. L/S /27_
Limber Commence		77 7 2 2 2	la.Kanimata	Sample Condition on Receipt (e.g., broken, no
JUN-010-3000 Send (Mame) eet of the OTF	white coevito the Hill	Containers	Total Volume	ice, Chain-of-Custody, etc.)
concantistican specie in order	Water (Extractable)			no ce samples Wil
Sampling Date:	(Extractable)		Thiles	appear 80° F. Custody seal catalo
(Begin) House were (CAB(End) = 3	Water (VOA)	ci. 2 ed vicit co	0.4	
A CONTRACTOR OF THE PARTY OF TH	Soil/Sediment		30,140	paperwall agress.
Check tendition of all samples	A			
ALE LEDITEX Durections	Soil/Sediment			
(Name of Carrier War	(VOA)			
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6/2/87	1 your convenience or	the back of each pa	je of the OTR's and	DLOs:
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- 983900 4441 Tarrect &	ciressee.	स्त्रे प्राप्ताः हाट गामान्त	e sure mer en	
Airbill Number: Below	OFR), Organics Labo	abry Chronicle-Ex	actions (OCL E)	
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8 Sample Description, bet	or pencil, and make su	ue all iniormaticans	Sample Lo	cation
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Ground Water	pes of information requ — <b>Solids</b>	्र इस <mark>ed</mark> of yea, कार्य हैंदि	n-this	
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Sample Managennent Office				
Hazardous Wastelinvestigati		~ . ~ .	Py	410010010

LAB COPY FOR RETURN TO SMO

U.S. ELIVIRONMENTAL PRO

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-09

SAMPLE MATRIX:

DATA RELEASE AUTHORIZED BY: Wum La

CASE NO: 7410 QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/16/87

DIL FACTOR:

10.0

PERCENT MOISTURE: (NOT DECANTED) NR

CAS NUMBER	₹	UG/	'L	CAS NUMBER		UG/	L
74-87-3	CHLOROMETHANE	100	ย	78-87~5	1,2-DICHLOROPROPANE	50	Ų
74-83-9	BROMOMETHANE	100	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	50	U
75-01-4	VINYL CHLORIDE	66	J	79-01-6	TRICHLORGETHENE	50	U
75-00-3	CHLORGETHANE	100	U	124-48-1	DIBROMOCHLOROMETHANE	50	U
75-09-2	METHYLENE CHLORIDE	50	U	79-00-5	1,1,2-TRICHLOROETHANE	50	U
67-64-1	ACETONE	100	U	71-43-2	BENZENE	50	U
75-15-0	CARBON DISULFIDE	50	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	50	U
75-35-4	1.1-DICHLOROETHENE	50	U	110-75-8	2-CHLOROETHYLVINYLETHER .	100	Ü
75-35-3	1,1-DICHLOROETHANE	50	U	75-25-2	BRONOFORM	50	U
156-60-5	TRANS-1, 2-DICHLOROETHENE .	210		108-10-1	4-METHYL-2-PENTANONE	100	U
67-66-3	CHLOROFORM	50	U	591-78-6	2-HEXANONE	100	U
107-06-2	1,2-DICHLOROETHANE	50	U	127-18-4	TETRACHLOROETHENE	50	U
78-93-3	2-BUTANONE	100	U	79-34-5	1,1,2,2-TETRACHLORGETHANE	100	U
71-55-6	1,1,1-TRICHLORGETHANE	50	U	108-88-3	TOLUENE	27	J
56-23-5	CARBON TETRACHLORIDE	50	U	108-90-7	CHLOROBENZENE	1100	
108-05-4	VINYL ACETATE	100	U	100-41-4	ETHYLBENZENE	50	U
75-27-4	BROMODICHLOROMETHANE	50	U	100-42-5	STYRENE	50	U
					TOTAL XYLENES	44	J

- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

NR - Not Required

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING GUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO: 7410

ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

CONCENTRATION: GPC CLEANUP YES X NO LOW SEPARATORY FUNNEL EXTRACTION YES DATE EXTRACTED/PREPARED: 06/15/87 CONTINUOUS LIGUID-LIQUID EXTRACTION X YES DATE ANALYZED: 07/11/87 CONC/DIL FACTOR:

PERCENT MOISTURE: (DECANTED)

		UG/		CAS NUMBER		UG/	L
CAS NUMBER		10	_	83-32-9	ACENAPHTHENE	10	U
108-95-2	PHENOL		U	51-28-5	2,4-DINITROPHENOL	50	U
111-44-4	BIS(2-CHLOROETHYL)ETHER .	10	U	100-02-7	4-NITROPHENOL	5.0	U
95-57-8	2-CHLOROPHENOL	29		132-64-9	DIBENZOFURAN	10	U
541-73-1	1,3-DICHLOROBENZENE	10	U	121-14-2	2,4-DINITROTOLUENE	10	u
106-46-7	1,4-0ICHLOROSENZENE	24			2,6-DINITROTOLUENE	10	U
100-51-5	BENZYL ALCOHOL	10	Ų	606-20-2	DIETHYLPHTHALATE	10	U
95-50-1	1,2-DICHLOROBENZENE	230		84-66-2	4-CHLOROPHENYL-PHENYLETHER	10	ย
95-48-7	2-METHYLPHENOL	10	U	7005-72-3	FLUORENE	10	Ü
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER		U	86-73-7	·	50	1.7
106-44-5	4-METHYLPHENOL	10	U	100-10-6	4-NITROANILINE	50	บผน
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10	yυ yυ
67-72-1	HEXACHLOROETHANE	10	U	86-30-6	N-NITROSCOIPHENYLAMINE (1)	10	<b>)</b>
98-95-3	NITROBENZENE	10	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	10	ü
78-5 <b>9-1</b>	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	50	ย
88-75-5	2-NITROPHENOL	10	U	87-86-5	PENTACHLOROPHENOL	10	U
105-67-9	2,4-DIMETHYLPHENOL	10	Ų	85-01-8	PHENANTHRENE		U
65-85-0	BENZOIC ACIO	50	U	126-12-7	ANTHRACENE	10	u
111-91-1	815(2-CHLOROETHOXY)METHANE	10	U	84-74-2	DI-N-BUTYLPHTHALATE	10	_
120-83-2	2,4-DICHLOROPHENOL	10	U	266-44-0	FLUGRANTHENE	10	ນ
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	U
91-20-3	NAPHTHALENE	10	U	85-68-7	BUTYLBENZYLPHTHALATE	10	U
106-47-8	4-CHLOROANILINE	10	U	71-74-1	3,3'-DICHLOROBENZIDINE	20	U
87-68-3	HEXACHLOROBUTADIENE	10	U	56-55-3	BENZO(A)ANTHRACENE	10	U
59-50-7	4-CHLORO-3-METHYLPHENOL .	10	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	15	
91-57-6	2-METHYLNAPHTHALENE	10	U	218-01-9	CHRYSENE	10	U
77-47-4	HEXACHLOROCYCLOPENTADIENE	10	U	117-84-0	DI-N-OCTYL PHTHALATE	10	
88-96-2	2,4,6-TRICHLOROPHENOL	10	υ	205-99-2	BENZO(B)FLUORANTHENE	10	
95-95-4	2,4,5-TRICHLOROPHENOL	50	u	207-08-9	BENZO(K)FLUORANTHENE	10	
91-58-7	2-CHLORONAPHTHALENE	10	U	50-32-8	BENZO(A) PYRENE	10	_
88-74-4	2-NITROANILINE	50	U	193-39-5	INDENO(1,2,3-CD)PYRENE	10	
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZ(A,H)ANTHRACENE	18	
208-96-8	ACENAPHTHYLENE	10	U	191-24-2	BENZO(G, H, I) PERYLENE	10	U
		F 4					

50 · U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . .

Case No:

7410

Sample Number ah648

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)
Date Extracted/Prepared: 15-Jun-97
Date Analyzed: 07-Jul-87
Conc/Dil Factor: 1
Percent Moisture(decanted) NR

GPC Cleanup Yes [x]-No
Separatory Funnel Extraction Yes
Continuous Liquid-Liquid Extraction [x] Yes

CAS		[ug/L] or ug/Kg
Number		
319-84-6	Alpha-BHC	จ.05 ย
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 ย
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.1 U
72-55-9	4,4'-DDE	0.1 U
72-20-B	Endrin	0.1 U
33213-65-9	Endosulfan II	0.1 U
72-54-8	4,4'-DDD	0.1.0
1-31-07-8	Endosulfan Sulfate	0.1 U
50-29-3	4,4'-DDT	0.1 U
72-43-5	Methoxychlor	0.5 U
53494-70-5	Endrin Ketone	0.1 U
57-74 <b>-9</b>	Chlordane	0.5 U
8001-35-2	Toxaphene	1 Ü
12674-11-2	Aroclor-1016	0.5 U
11104-28-2	Aroclor-1221	0.5 ป
11141-16-5	Aroclor-1232	0.5 U
53469-21-9	Aroclor-1242	0.5 U
12672-29-6	Aroclor-1248	0.5 U-
11097-69-1	Aroclor-1254	1 0
11096-82-5	Aroclor-1260	1 U
•	Vi = Volume of extract injected (	ul)
	Vs = Volume of water extracted (m	

Vi = Volume of extract injected (ul)
Vs = Volume of water extracted (ml)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

 $V_{5} = 1000$  or  $W_{5} = V_{1} = 10000$   $V_{1} = 3.0$ 

Fore I



## U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313-703 '557-2490 • FTS | 557-2490

Sample Number

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O Charles and analysis a seconds	CANDY FO		OM CL	en epikarania araban baran araban araban			
1) Case Number:	② SAMPLE C	Check One)		ip To:			
1 - 1894 1900				(ICON) INC.			
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Sample Site Name/Code:							
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(5) Regional Office VE OSAR	6 For each sam	ple collected so	ecify number	(1) Analysis Lab			
Sampling Personnel: apolatory	of containers	used and mark v	rolume level per	Rec'd by			
5. Transfer to the Sample Number	on each bottle	Eporatory Chronicle	Extractions: OEC:	Date Rec d. 6/8/			
W. June	y for your files.		**	Sample Condition			
ASSTANTION DE STATE OLE	white copy) to the HA	g ≥™Number of	Approximate	on Receipt (e.g., broken, no ice, Chain-of-Custody, etc.)			
condiniblique), space provided		Continuois	1002.100	no un Samples			
Sampling Date:	Water (Extractable)	inote imments re	Mark Die	New approx 80° F			
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(Bedin), the Report (OFR (Eug) are a	Mater  "(VOA) De a Cascreba	scir Asserberal co	Some riff.	custody seal extact			
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Check condition of all samuses ypibbing Information							
(B) 5/	Soil/Sediment						
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6/12/87	туош солуетиенсе ог						
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V. S. Sale sentit Lift Unect of							
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Sample Description to be to the sample Description of the sample			(9) Sample Loc	nation .			
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Ground Mater	ee or wounegons of re <b>Solids</b>	अल्लान्यं वर्षे भवतः अस्यतिही।	म्बर्गाङ्क । । । । । । । । । । । । । । । । । । ।	• .			
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General Darections							
Special Handling Instruction							
'e.g., safety precautions, hazard	ous nature)	•		•			
PO 1864-918    - mandița Viiginia 20318	•	,	• .				
Sample Management Office:							
Masardous Waste Investigatio		34 <b>0</b> I	PV A	10013163			
US EMMPONMENTAL PR		FOR BETTIRN TO SM	r 7 4	TOATSTA			

LAB COPY FOR RETURN TO SMO

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAB SAMPLE ID NO: 4182-08 WATER

SAMPLE MATRIX:

DATA RELEASE AUTHORIZED BY: 9.

7418 CASE NO: GC REPORT NO: 7410 CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/16/87

DIL FACTOR:

PH NR10.0

PERCENT HOISTURE: (NOT DECANTED) NR

74-87-3 CHLOROMETHANE 100 U 78-87-5 1,2-DICHLOROPROPANE 50 U 74-83-9 BROMOMETHANE 100 U 10061-02-6 TRANS-1,3-DICHLOROPROENE 50 U 75-01-4 VINYL CHLORIDE 100 U 79-01-6 TRICHLOROETHENE 50 U 75-00-3 CHLOROETHANE 100 U 124-48-1 DIBROMOCHLOROMETHANE 50 U 75-09-2 METHYLENE CHLORIDE 11 J 79-00-5 1,1,2-TRICHLOROETHANE 50 U 67-64-1 ACETONE 100 U 71-43-2 BENZENE 24 J 75-15-0 CARBON DISULFIDE 50 U 10061-01-5 CIS-1,3-DICHLOROPROPENE 50 U 75-35-4 1,1-DICHLOROETHENE 50 U 110-75-8 2-CHLOROETHYLVINYLETHER 100 U 75-25-2 BROMOFORM 50 U
75-01-4 VINYL CHLORIDE . 100 U 79-01-6 TRICHLOROETHENE . 50 U 75-00-3 CHLOROETHANE . 100 U 124-49-1 DIBROMOCHLOROMETHANE . 50 U 75-09-2 METHYLENE CHLORIDE . 11 J 79-00-5 1,1,2-TRICHLOROETHANE . 50 U 67-64-1 ACETONE . 100 U 71-43-2 BENZENE
75-00-3 CHLOROETHANE
75-09-2 METHYLENE CHLORIDE
75-15-0 CARBON DISULFIDE
75-15-8 CARBON DISULFIDE 50 U 10061-01-5 CIS-1,3-DICHLOROPROPENE 50 U 75-35-4 1,1-DICHLOROETHENE 50 U 110-75-8 2-CHLOROETHYLVINYLETHER . 100 U
75-35-4 1.1-DICHLOROETHENE 50 U 110-75-8 2-CHLOROETHYLVINYLETHER . 100 U
75-35-4 1,1-DICHLURUCINENE Se U III-75-0 Z ENERGONI
EA II
75-35-3 1,1-DICHLOROETHANE 50 U 75-25-2 BROMOFORM 50 U
156-60-5 TRANS-1, 2-DICHLOROETHENE 50 U 108-10-1 4-METHYL-2-PENTANONE 100 U
67-66-3 CHLOROFORM 50 U 591-78-6 2-HEXANONE
107-06-2 1,2-DICHLOROETHANE 50 U 127-18-4 TETRACHLOROETHENE 50 U
78-93-3 2-BUTANONE
71-55-6 1.1,1-TRICHLOROETHANE 50 U 108-88-3 TOLUENE 50 U
56-23-5 CARBON TETRACHLORIDE 50 U 108-90-7 CHLOROBENZENE 1800
108-05-4 VINYL ACETATE 100 U 100-41-4 ETHYLBENZENE 50 U
75-27-4 BROMODICHLOROMETHANE 50 U 100-42-5 STYRENE 50 U
TOTAL XYLENES 1300

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT. NR - Not Required U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED Not Required VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

LABORATORY NAME: ETC/TOXICON

CASE NO:

87-68-3

59-50-7

91-57-6

77-47-4

88-06-2

95-95-4

91-58-7

88-74-4

131-11-3

208-96-8 99-09-2

7410

ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

YES X NO GPC CLEANUP CONCENTRATION: LOW SEPARATORY FUNNEL EXTRACTION VES DATE EXTRACTED/PREPARED: 06/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION X YES DATE ANALYZED: 07/11/87 CONC/OIL FACTOR: 1. PERCENT MOISTURE: (DECANTED) UG/L CAS NUMBER UG/L CAS NUMBER ACENAPHTHENE . . . . . . . . 10 U 25 83-32-9 108-95-2 2,4-DINITROPHENOL . . . . 50 U 10 U 51-28-5 BIS(2-CHLOROETHYL)ETHER . 111-44-4 4-NITROPHENOL . . . . . . 13 100-02-7 2-CHLOROPHENOL . . . . . . 95-57-8 DIBENZOFURAN . . . . . . . . 10 ш 132-64-9 10 541-73-1 1,3-DICHLOROSENZENE .... U 10 2,4-DINITROTOLUENE . . . . 10 121-14-2 1,4-DICHLOROBENZENE . . . U 106-46-7 10 2.6-DINITROTOLUENE . . . . BENZYL ALCOHOL . . . . . 10 606-20-2 U 100-51-6 DIETHYLPHTHALATE . . . . . 10 1,2-DICHLOROBENZENE . . . 10 U 84-66-2 95-50-1 4-CHLOROPHENYL-PHENYLETHER 10 U 10 · U 7005-72-3 95-48-7 2-METHYLPHENOL . . . . . . 10 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER 86-73-7 10 U 4-NITROANILINE . . . . . . 58 U 4-METHYLPHENOL . . . . . . 18 U 100-10-6 106-44-5 UWLK 4,6-DINITRO-2-METHYLPHENOL 50 N-NITROSO-DI-N-PROPYLAMINE 10 U 534-52-1 621-64-7 تاعر N-NITROSODIPHENYLAMINE (1) 10 86-30~6 HEXACHLOROETHANE . . . . . 10 U 67-72-1 U 4-BROMOPHENYL-PHENYLETHER 10 10 U 101-55-3 98-95-3 10 U HEXACHLOROBENZENE . . . . 10 118-74-1 78-59-1 ISOPHORONE . . . . . . . . . . PENTACHLOROPHENOL . . . . . 50 2-NITROPHENOL . . . . . . 10 87-86-5 88-75-5 U 10 2,4-DIMETHYLPHENOL . . . . 21 85-01-8 105-67-9 50 120-12-7 10 BENZOIC ACIO . . . . . . . 11 65-85-8 U 84-74-2 DI-N-BUTYLPHTHALATE . . . 10 BIS(2-CHLOROETHOXY)METHANE 111-71-1 FLUORANTHENE . . . . . . . . . 204-44-0 2,4-DICHLOROPHENOL . . . . 120-83-2 10 U 10 129-00-0 120-82-1 1,2,4-TRICHLOROSENZENE . . 10 U 10 85-68-7 BUTYLBENZYLPHTHALATE . . . υ 10 u 91-20-3 20 3,3'-DICHLOROSENZIDINE . . 91-94-1 106-47-8 4-CHLOROANILINE . . . . BENZO(A)ANTHRACENE . . . . 10 U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

HEXACHLOROSUTADIENE . . .

4-CHLORO-3-METHYLPHENOL .

2-METHYLNAPHTHALENE . . .

HEXACHLOROCYCLOPENTADIENE

2,4,6-TRICHLOROPHENOL . .

2,4,5-TRICHLOROPHENOL . .

2-CHLORONAPHTHALENE . . .

2-NITROANILINE . . . . . .

DIMETHYL PHTHALATE . . . .

ACENAPHTHYLENE . . . . . .

FORM I

56-55-3

117-81-7

218-01-9

117-84-6

205-99-2

207-08-9

50-32-8

193-39-5

53-70-3

191-24-2

10 U

10 U

10

10 U

10 U

50 U

10 U

50 U

10 U

10 U

50 U

BIS(2-ETHYLHEXYL) PHTHALATE

CHRYSENE . . . . . . . . .

DI-N-OCTYL PHTHALATE . . .

BENZO(B)FLUGRANTHENE . . .

BENZO(A) PYRENE . . . . . .

INDENC(1,2,3-CD)PYRENE . .

DIBENZ(A, H) ANTHRACENE . .

BENZO(G, H, I) PERYLENE . . .

BENZO(K)FLUORANTHENE . . . . .

10

10 U

10 U

10

10 ш

10 u

10

10

U

7410

Sample Number abó47

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

[x]-No Yes GPC Cleanup Yes Separatory Funnel Extraction Continuous Liquid-Liquid Extraction [x] Yes

[ug/L] or ug/Kg CAS Number 0.05 8 Alpha-BHC.... 319-84-6 0.05 U Beta-BHC ..... 319-85-7 Delta-BHC..... 0.05 U 319-86-8 0.05 U Gamma-BHC (Lindane) ..... 58-89-9 Heptachlor ..... 0.05 U 76-44-B

Aldrin ..... 0.05 U 309-00-2 0.05 U Heptachlor Epoxide..... 1024-57-3 0.05 U Endosulfan I 959-98-8 0.1 U Dieldrin ..... 60-57-1 4,4'-DDE ..... 0.1 U 72-55-9 0.1 U Endrin ..... 72-20-8 0.1 U Endosulfan II ..... 33213-65-9 0.1 U 4.4'-DDD ..... 72-54-8 0.1 U Endosulfan Sulfate..... 1-31-07-8

0.1 U 4,4'-DDT ..... 50-29-3 0.5 U Methoxychlor ..... 72-43-5 0.1 U Endrin Ketone ..... 53494-70-5 0.5 U Chlordane ..... 57-74-9 1 11 Toxaphene ..... 8001-35-2 0.5 U

Aroclor-1016 ..... 12674-11-2 0.5 U Aroclor-1221 ..... 11104-28-2 Aroclor-1232 ..... 0.5 U 11141-16-5 0.5 U Arpclor-1242 ..... 53469-21-9 0.5 U Aroclor-1248 .....

12672-29-6 1 0 Aroclor-1254 ..... 11097-69-1 1 U Aroclor-1260 ..... 11096-82-5

> Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g)

Vt = Volume of total extract (ul)

Vi = 3.010000 Vt = or Ws = Vs = 1000

Fora I



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 518. Alexandria, Virginia 22313—703 · 557-2490 • FTS 557-2490 • FT

Sumple Number
AH 646

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1) Case Number:	② SAMPLE C	ONCENTRATION Check One)	ON	4 Sh			
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Sample Site Name/Code:	Medi	um Concentration		DIO ROUGE, LA			
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Tonding Organics Ealth again.	Haracie-Extra Mater	MOE	Trans	*			
	Soil/S	ediment	n are com	Ship'	Го:		
Regional Office VELSAL	6 For each sam	ple collected sp	ecify nur	nber	(1) Analysis Jab: // Rec'd by: ///		
Sampling Sergonnel aboratory	on each bottle	Inoratory Chionicle.	Extractions Orditing to	OEC	Date Rec d: 4/5/87		
4 Send (Name) recontine OTF		Number of	Approxi	imate	Sample Condition on Receipt (e.g., broken, no		
concental brough space provide		Containers	Total Vo	lume	ice, Chain-of-Custody, etc.)  No ICE.		
Sampling Date:	Water (Extractable)	imote comments re	jarding san	::ple	Samples approx 80°F.		
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Check condition of all samples	Soil/Sediment (Extractable)		80	₹.	Custed Seal intend		
Analys Drag X Drections	Soil/Sediment (VOA)	2	8 09	2			
6. Relate any problems and/or que		D piecedynas wehi isasionu	फडक व्याप्ति <u>।</u>	e ot			
5. The <b>Date Spibbed</b> : well as the Ols 18.	e a <mark>ddress</mark> and phone : r your conversence o				OTIC REPORT		
283200.44445. 1007.	rencie-Analysis (VLC	ते) स्नाध्य क्रिय क्राक्षांस्यः।	ಾನಗಾಕ ಚಿತ್ರಾ	eth .			
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® Sample Description, ben	or pencil, and make su	प्रकृति । प्रत्याच्या स्ट	Samp	ole Loc	ation *		
2. Faminarize yourself with all try		nutra es veve asembre	ರ್ಷ-೧೯೯೬		4. 2150		
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Garoral Directions  Teachate	_ Other (specify) _			·***			
(e.g., safety precautions, hazard					<u> </u>		
प्रतासक्त <b>्रिवकुद्धे ३५३</b> । ह	ous intuie)	· · · · · · · · · · · · · · · · · · ·					
Hazardous Waste Investigate Sample Management Chica P.O. Roy 218	. 83		, ·				
US ENVIRONMENTAL PE	SOTECTION AGA	FOR RETURN TO SM	 O		7410013119		

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAB SAMPLE ID NO: 4182-07

SAMPLE MATRIX: SOIL

DATA RELEASE AUTHORIZED BY:

CASE NO: 7410 QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

Ø6/17/87

CONC/DIL FACTOR:

1, PH 6.2

PERCENT MOISTURE: (NOT DECANTED) 20.0

CAS NUMBER	į	UG/K	G	CAS NUMBER	•	UG/H	(6
74-87-3 CHLOROMETHANE		13	U	78-87-5	1,2-DICHLOROPROPANE	6	IJ
74-83-9 BROMOMETHANE		13	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	6	IJ
75-01-4 VINYL CHLORIDE		13	U	79-01-6	TRICHLOROETHENE	6	U
75-00-3 CHLOROETHANE		13	U	124-48-1	DIBROMOCHLOROMETHANE	6	U
75-89-2 METHYLENE CHLORIDE		4	BJ	79-00-5	1,1,2-TRICHLOROETHANE	6	U
67-64-1 ACETONE		5	J	71-43-2	BENZENE	6	U
75-15-0 CARBON DISULFIDE		6	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	6	U
75-35-4 1,1-DICHLORGETHENE		6	U	110-75-8	2-CHLORGETHYLVINYLETHER .	13	U
75-35-3 1,1-DICHLOROETHANE		6	U	75-25-2	BROMOFORM	6	U
156-60-5 TRANS-1, 2-DICHLOROETHENE		6	U	108-10-1	4-METHYL-2-PENTANONE	13	U
67-66-3 CHLOROFORH		6	u	591-78-6	2-HEXANONE	13	U
107-06-2 1,2-DICHLORDETHANE		6	U	127-18-4	TETRACHLOROETHENE	6	U
78-93-3 2-BUTANONE :		13	Ų	79-34-5	1, 1, 2, 2-TETRACHLOROETHANE	13	U
71-55-6 1,1,1-TRICHLORGETHANE		6	U	108-88-3	TOLUENE	1	J
56-23-5 CARBON TETRACHLORIDE		6	U	108-90-7	CHLOROBENZENE	6	U
108-05-4 VINYL ACETATE		13	v	100-41-4	ETHYLBENZENE	6	U
75-27-4 BROMODICHLOROMETHANE		6	U	100-42-5	STYRENE	6	U
•					TOTAL XYLENES	6	IJ

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

R

LABORATORY NAME: ETC/TOXICON

CASE NO:

99-09-2

7410

SAMPLE NUMBER AH646

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

YES X NO LOW GPC CLEANUP CONCENTRATION: SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: \$6/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION YES 07/17/87 DATE ANALYZED: DIL FACTOR: 10.0 20.0 PERCENT MOISTURE: (DECANTED) CAS NUMBER UG/KG CAS NUMBER ACENAPHTHENE . . . . . . 4100 U PHENOL . . . . . . . . . . 4100 83-32-9 108-95-2 2,4-DINITROPHENOL . . . . 20000 U 111-44-4 BIS(2-CHLOROETHYL)ETHER 4100 51-28-5 2-CHLOROPHENOL . . . . . 4100 100-02-7 4-NITROPHENOL . . . . . . 20000 U 95-57-8 DIBENZOFURAN . . . . . . . 4100 1.3-DICHLOROBENZENE . . . 4100 132-64-9 541-73-1 2,4-DINITROTOLUENE . . . . 4100 IJ 121-14-2 1,4-DICHLOROBENZENE . . . 4100 106-46-7 2,6-DINITROTOLUENE . . . 4100 BENZYL ALCOHOL . . . . . 4100 606-20-2 100-51-6 DIETHYLPHTHALATE . . . . 4100 1,2-DICHLOROSENZENE 4100 84-66-2 95-50-1 4-CHLOROPHENYL-PHENYLETHER 4100 7005-72-3 95-48-7 2-METHYLPHENOL . . . . . 4100 FLUORENE . . . . . . . . . . 4100 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER4100 86ー73ープ 4-METHYLPHENOL . . . . . 4100 106-44-5 100-10-6 4.6-DINITRO-2-METHYLPHENOL 20000 U N-NITROSO-DI-N-PROPYLAMINE 4100 534-52-1 621-64-7 86-30-6 N-NITROSODIPHENYLAMINE (1) 4100 HEXACHLOROETHANE . . . . 4100 U 67-72-1 4-BROMOPHENYL-PHENYLETHER 4100 NITROBENZENE . . . . . . 4100 101-55-3 98-95-3 ISOPHORONE . . . . . . . . 4100 HEXACHLOROBENZENE . . 4100 118-74-1 78-59-1 PENTACHLOROPHENOL . . . . 20000 U 2-NITROPHENOL . . . . . 4100 87-86-5 88-75-5 4100 2,4-DIMETHYLPHENOL . . . . 4100 85-01-8 105-67-9 ANTHRACENE . . . . . . . . 4100 BENZOIC ACID . . . . . . . 20000 U 120-12-7 65-85-**0** 111-91-1 BIS(2-CHLOROETHOXY) METHANE 4100 84-74-2 DI-N-BUTYLPHTHALATE . . . 4100 FLUORANTHENE . . . . . . 4100 2,4-DICHLOROPHENOL . . . 4100 284-44-6 120-83-2 1,2,4-TRICHLOROBENZENE . . 4100 129-00-0 PYRENE . . . . . . 120-82-1 85-68-7 BUTYLBENZYLPHTHALATE . . . 4100 U NAPHTHALENE . . . . . . 4100 91-20-3 3,3'-DICHLOROBENZIDINE . . 8300 106-47-8 4-CHLOROANILINE . . . . . 4100 91-94-1 HEXACHLOROBUTADIENE . . . 4100 BENZO(A)ANTHRACENE . . . 4100 56-55-3 87-68-3 BIS(2-ETHYLHEXYL) PHTHALATE 19000 4-CHLORO-3-METHYLPHENOL . 4100 117-81-7 59-50-7 CHRYSENE . . . . . . . . 4100 2-METHYLNAPHTHALENE . . . 4100 218-01-9 91-57-6 DI-N-OCTYL PHTHALATE . . . 6400 77-47-4 HEXACHLOROCYCLOPENTADIENE 4100 117-84-0 205-99-2 BENZO(B)FLUGRANTHENE . . . 4100 88-86-2 2,4,6-TRICHLOROPHENOL . . 4100 BENZO(K)FLUORANTHENE . . . 4100 2,4,5-TRICHLOROPHENOL . . 20000 U 207-08-9 95-95-4 4100 2-CHLORONAPHTHALENE . . . 4100 50-32-8 91-58-7 INDENO(1,2,3-CD)PYRENE . . 4100 2-NITROANILINE . . . . . . 20000 U 193-39-5 88-74-4 DIBENZ(A, H) ANTHRACENE . . 4100 53-70-3 DIMETHYL PHTHALATE . . . 4100 U 131-11-3 191-24-2 BENZO(G, H, I) PERYLENE . . . 4100 ACENAPHTHYLENE . . . . . 4100 U 208-94-8

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . . 20000 U

Case No:

7410

Sample Number AH646

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: (Low] Medium (Circle one)
Date Extracted/Prepared: 15-Jun-87
Date Analyzed: 24-Jun-87
Conc/Dil Factor: 1
Percent Moisture(decanted) 0

GPC Cleanup Yes (x)-No
Separatory Funnel Extraction Yes
Continuous Liquid-Liquid Extraction Yes

CAS	ug/l	L or [ug/Kg]
Number		
319-84-6	Alpha-BHC	10 U
319-85-7	Beta-BHC	10 U
319-86-8	Delta-BHC	10 U
58-89-9	Samma-BHC (Lindane)	10 U
76-44-8	Heptachlor	10 U
309-00-2	Aldrin	10 U
1024-57-3	Heptachlor Epoxide	10 U
959-98-8	Endosulfan I	10 U
60-57-1	Dieldrin	20 U
72-55-9	4,4'-DDE	20 U
72-20-8	Endrin	20 U
33213-65-9	Endosulfan II	20 U
72-54-8	4,4'-DBD	20 U
1-31-07-8	Endosulfan Sulfate	20 U
50-29-3	4,4'-DDT	20 U
72-43-5	Methoxychlar	100 U
53494-70-5	Endrin Ketone	20 U
57-74-9	Chlordane	100 U
8001-35-2	Toxaphene	200 U
12674-11-2	Aroclor-1016	100 U
11104-28-2	Aroclor-1221	100 U
11141-16-5	Araclar-1232	100 U
53469-21-9	Aroclor-1242	100 ย
12672-29-6	Aroclor-1248	100 U
11097-69-1	Aroclor-1254	200 U
11096-82-5	Aroclor-1260	200 U
	Vi = Volume of extract injected (ul)	

Vs = Volume of water extracted (ml)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

V5 =

or Ws = 1.5

Vt =

1000

 $\forall i = 3.0$ 

Form I



### U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Vinginia 22313—703 557-2490 • FTS - 557-2490

Sample Number

### ORGANICS TRAFFIC REPORT

1) Case Number: (4) Ship To: 2 SAMPLE CONCENTRATION (Check One) 2012/14/10 SOXICON THE ostey) aged 1841 and chickless comic of the page (Nesteon hielaromica Low Concentration is sugability BARDIN ROUGE, LA resources beside stop of expaction Medium Concentration 5 Sample Site Name/Code: complete the appropriate secti :Attn: LEP KIDS na chi ni zi qui di il venchimo repajkaja gudanjoa jest (3) a SAMPLE MATRIX (up point analysis) THE STREET STREET OF THE OC (Check One) Transfer ponding Organics Laboratory ល់សក់ពាមស៊ីយ Water TCE Ship To: Soil/Sediment (11) Analysis I (5) Regional Office VERSAL (6) For each sample collected specify number Sampling Personnel Papolatoid of containers used and mark volume level Rec'd by bo, ou each pottle boratory Chronicle-Extractions (OLC Date Re Samble Condition v jor yenrineşi : on Receipt (e.g., broken, no 3- (150 - 3000 white copy to the HWI San Number of Approximate ice, Chain-of-Custody, etc.) **Total Volume** Containers No vie. samples was conditiblious) space provid Water. Sampling Date: (Extractable) approx 80° F. 6 damine serecente Kance Water (Bedin) THE HEDOM OUT End) THE (VOA) is a distantion ग**्रा**क्षकृतुरस्थान्यः द Soil/Sediment Shipping Information (Extractable) Check condition of all sample Soil/Sediment Lab Atory Directions (VOA) CName of Carrier Marie Mar Relate any propiems aridiore? Transparator Outpe use at OTR s or Other 611218 your convenience or the neck of each pulse of the OTR's and OLC's. IF Date Shipped: A Si Sa e address and phope riumber of सिल निर्मित प्रिवामीस Maragemen ભ્યારોક ભાગ્રોપ્રકાર (પ્રાપ્ત મેં) must be mailed. Te sure that au ્ OTR: Organics Labo assiv Chronicle-fix: WiAirbill Nimber: Below Sample Description: Den or bench and make suite all information in (9) Sample Location Surface Water, 101 earns Mixed Media Aminanze yourseit with all types of unconstant requested, thy ou said fill in this Ground Water Solids was-orly the mideral promoted to record sample information _ Leachate . Other (specify) General Directions Special Handling Instructions: (e.g., safety precautions, hazardous nature) ಸಕಿವಿದನಕ್ಕು Varginia ವಿವಿಶ್ಯಕ

### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-06

SAMPLE MATRIX: WATER

DATA RELEASE AUTHORIZED BY: Warm Lullish

CASE NO: 7410 QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

### VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/15/87

CONC/DIL FACTOR:

1. PH

PERCENT MOISTURE: (NOT DECANTED)

NR NR

CAS NUMBER		UG/	L	CAS NUMBER		UG/	L
74-87-3	CHLOROMETHANE	10	U	78-87-5	1,2-DICHLOROPROPANE	5	U
74-83-9	BROMOMETHANE	10	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	5	U
75-01-4	VINYL CHLORIDE	10	U	79-01-6	TRICHLOROETHENE	5	U
75-00-3	CHLOROETHANE	10	U	124-48-1	DIBROMOCHLOROMETHANE	5	U
75-09-2	METHYLENE CHLORIDE	10		79- <b>00-</b> 5	1,1,2-TRICHLOROETHANE	5	IJ
67-64-1	ACETONE	10	U	71-43-2	BENZENE	5	U
75-15-0	CARBON DISULFIDE	5	U	10061-01-5	CIS-1,3-DICHLOROPROPENE .	5	U
75-35-4	1,1-DICHLOROETHENE	5	U	110-75-8	2-CHLOROETHYLVINYLETHER .	10	Ų
75-35-3	1,1-DICHLOROETHANE	5	υ	75-25-2	BROMOFORM	5	U
156-60-5	TRANS-1, 2-DICHLOROETHENE .	5	U	108-10-1	4-HETHYL-2-PENTANONE	10	U
67-66-3	CHLOROFORM	5	Ų	591-78-6	2-HEXANONE	10	U
107-06-2	1,2-DICHLOROETHANE	5	U	127-18-4	TETRACHLOROETHENE	5	U
78-93-3	2-BUTANONE	10	U	79~34-5	1, 1, 2, 2-TETRACHLOROETHANE	18	U
71-55-6	1,1,1-TRICHLOROETHANE	5	U	108-88-3	TOLUENE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U	108-90-7	CHLOROBENZENE	5	U
108-05-4	VINYL ACETATE	10	U	100-41-4	ETHYLBENZENE	5	U
75-27-4	BROMODICHLORGMETHANE	5	U	100-42-5	STYRENE	5	U
, , _ , ,					TOTAL XYLENES	5	U

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED NR - Not Required value is the minimum attainable detection limit for the sample.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING GUALIFIERS.

CASE NO: 7410

ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW  DATE EXTRACTED/PREPARED: 06/15/87  DATE ANALYZED: 07/11/87  CONC/DIL FACTOR: 1.  PERCENT MOISTURE: (DECANTED)			NUP YES X NO BRY FUNNEL EXTRACTION YES BUS LIQUID-LIQUID EXTRACTION	X YES	
	UG/L	CAS NUMBER	t	UG/L	
CAS NUMBER	10 U	83-32-9	ACENAPHTHENE	10 Y	
108-95-2 PHENOL 111-44-4 BIS(2-CHLOROETHYL)ETHER	10 U	51-28-5	2,4-DINITROPHENOL	50 U	
	10 U	100-02-7	4-NITROPHENOL	50 U	
95-57-8 2-CHLOROPHENOL 541-73-1 1.3-DICHLOROBENZENE	10 U	132-64-9	DISENZOFURAN	10 U	
106-46-7 1,4-DICHLOROBENZENE	10 U	121-14-2	2.4-DINITROTOLUENE	10 U	
	10 U	606-20-2	2,6-DINITROTOLUENE	10 U	
100-51-6 BENZYL ALCOHOL	10 U	84-66-2	DIETHYLPHTHALATE	10 U	
	10 U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	10 U	
95-48-7 2-METHYLPHENOL . 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER		86-73-7	FLUORENE	10 U	
	10 U	100-10-6	4-NITROANILINE	50 U	
106-44-5 4-METHYLPHENOL 621-64-7 N-NITROSO-DI-N-PROPYLAMINE	10 U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	Se U WLL	L
67-72-1 HEXACHLORGETHANE	10 U	86-30-6	N-NITROSODIPHENYLAMINE (1)	10 BU	`
98-95-3 NITROBENZENE	10 U	101-55-3	4-BROHOPHENYL-PHENYLETHER	10 U	
78-59-1 ISOPHORONE	10 U	118-74-1	HEXACHLOROSENZENE	10 U	
88-75-5 2-NITROPHENOL	10 U	87-86-5	PENTACHLOROPHENOL	50 U	
105-67-9 2,4-DIMETHYLPHENOL	10 U	85-01-8	PHENANTHRENE	10 U	
65-85-0 BENZOIC ACID	SØ U	120-12-7	ANTHRACENE	10 U	
111-91-1 BIS(2-CHLOROETHOXY) METHANE	10 U	84-74-2	DI-N-BUTYLPHTHALATE:	10 U	
120-83-2 2,4-DICHLOROPHENOL	10 U	206-44-0	FLUORANTHENE	10 U	
120-82-1 1,2,4-TRICHLOROBENZENE	10 U	129-00-0	PYRENE	10 U	
91-20-3 NAPHTHALENE	10 U	85-68-7	BUTYLBENZYLPHTHALATE	10 U	
106-47-8 4-CHLOROANILINE	10 U	91-94-1	3,3'-DICHLOROBENZIDINE	20 U	
87-68-3 HEXACHLOROBUTADIENE	10 U	56-55-3	BENZO(A)ANTHRACENE	10 U	
59-50-7 4-CHLORO-3-METHYLPHENOL .	10 U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10 U	
91-57-6 2-METHYLNAPHTHALENE	10 U	218-01-9	CHRYSENE	10 U	
77-47-4 HEXACHLOROCYCLOPENTADIENE	10 U	117-84-0	DI-N-OCTYL PHTHALATE	10 U	
88-86-2 2,4,6-TRICHLOROPHENOL	10 U	205-99-2	BENZO(B)FLUORANTHENE	10 U	
95-95-4 2,4,5-TRICHLOROPHENOL	50. U	207-08-9	BENZO(K)FLUORANTHENE	10 U	
91-58-7 2-CHLORONAPHTHALENE	10 U	50-32-8	BENZO(A)PYRENE	10 U	
88-74-4 2-NITROANILINE	50 U	193-39-5	INDENO(1,2,3-CB)PYRENE	10 U	
131-11-3 DIMETHYL PHTHALATE	10 U	53-70-3	DIBENZ(A,H)ANTHRACENE	10 U	
208-96-8 ACENAPHTHYLENE	10 U	191-24-2	SENZO(G, H, I) PERYLENE	10 U	
99-09-2 3-NITROANILINE	50 U				
// T/ = # 1121 1121 1122 112 112 112 112 112 11					

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

Case No:

-7410

Sample Number ah645

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor: Percent Moisture(decanted)

1 NR GPC Cleanup [x]-No Separatory Funnel Extraction

Continuous Liquid-Liquid Extraction [x] Yes

Yes

CAS Number	•	[ug/L] or ug/Kg
319-8 <b>4-</b> 6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-B	Delta-BHC	0.05 U
5B-89-9	Gamma-BHC (Lindane)	อ.อร บ
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 ช
1024-57-3	Heptachlor Epoxide	0.05 ป
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.1 U
72-55-9	4,4'-DDE	0.1 U
72-20-8	Endrin	0.1 U
33213-65-9	Endosulfan II	0.1 U
72-54-8	4,4'-DDD	0.1 U
1-31-07-8	Endosulfan Sulfate	0.1 U
50-29-3	4,4'-DDT	0.1 U
72-43-5	Methoxychlor	0.5 U
53494-70-5	Endrin Ketone	0.1 U
57-74-9	Chlordane	0.5 บ
8001-35-2	Toxaphene	1 U
12674-11-2	Aroclor-1016	0.5 ป
11104-28-2	Aroclor-1221	0.5 U
11141-16-5	Aroclor-1232	0.5 U
53469-21-9	Aroclor-1242	0.5 U
12672-2 <b>9-</b> 6	Aroclor-1248	0.5 U
11097-69-1	Aroclor-1254	- 1 U
11096-B2-5	Aroclor-1260	1 U

Vt =

Form 1

Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Ws = Weight of sample extracted (g) Vt = Volume of total extract (ul)

or Ws =

1000

V5 =

10000

# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2493 • FTS 557-2493 ORGANICS TRAFFIC REPORT

Hazarcous Waste investigation Sample Managament Office PO. Box 818 Sample Number AH 644

7410013080

Sample Site Name/Code:  complete personal action of seriacion of seria	(Check (C	Theck One)  THE TRUE THE PROPERTY OF THE PROPE	Trans	TO:
Sampling Personnel: aparatory  (a) Name   see of the Old    (b) Name   see of the Old    (c) Name   see of the Old    (d) Name   see of the Old    (e) Name   see of the Old    (f) Name   see of the Old    (g) Regional Office   Fig.    (g) Regional Office   Fig.    (h) Ame   see of the Old    (g) Regional Office   Fig.    (h) Ame   see of the Old    (g) Regional Office   Fig.    (h) Ame   see of the Old    (g) Regional Office   Fig.    (h) Ame   see of the Old    (g) Regional Office   Fig.    (h) Ame   see of the Old    (h) Ame	(white copy) to the LIV by for your files. box <b>oy each potfle</b>	Iporatory Chronicle	Extractions (OEC.	Date Rec'd:
(Bedin) #c ReportOTR(Euglere a P)   Pure Manage     Properties   Prope	(Catractable) Water (VOA) = a chactable			appear. 80° F. custody seed intact paperwerk agress.
5 Relate any problems and/or quantity of Carrier male Mark Directions 1. Check condition of all samples pribbing Information	Soil/Sediment (VOA)	- procedures of the	use of Clins at	
983703 AAO Correct & Salar Date Spibbed; well as the Police Spibbed; well as the Polic	e address and phone r r your convenience or	umber of the HWI S the back of each pa	ample Managemen se of the OSH's and	O.C.s.
4 WJAirbill Number: Heports	(OTR), Organics Labe	atory Chronicle-Ex	eccons (OCL-E)	
General Directions  Teachate  Teachate  Cloud Mater  Clou	Mixed Media  Solids  Other (specify)	<del>ट्</del> रास्त धा ५००, धवते हो।		cation
(III) Special Handling Instructions, safety precautions, hazard	ctions: lous pature)			

LAB COPY FOR RETURN TO SMO

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### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAS SAMPLE ID NO: 4182-05 SAMPLE MATRIX: WATER

DATA RELEASE AUTHORIZED BY: Warm Lu !

7410 CASE NO: QC REPORT NO: 7410 /CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

NR

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

**06/15/87** 

CONCIDIL FACTOR:

1.

PERCENT MOISTURE: (NOT DECANTED) N/R

UG/L CAS NUMBER 11671 CAS NUMBER 78-87-5 1,2-DICHLOROPROPANE . . . CHLOROMETHANE . . . . . . 10 U 74-87-3 10061-02-6 TRANS-1,3-DICHLOROPROENE . 10 74-83-9 VINYL CHLORIDE . . . . . . 79-01-6 TRICHLOROETHENE . . . . . . 5 75-01-4 10 u DIBROMOCHLOROMETHANE . . . 5 CHLOROETHANE . . . . . . . 10 U 124-48-1 75-00-3 1,1,2-TRICHLOROETHANE . . 5 METHYLENE CHLORIDE . . . . 5 U 79-00-5 75-09-2 BENZENE . . . . . . . . . 71-43-2 67-64-1 ACETONE . . . . . . . . . 10 U 10061-01-5 CIS-1, 3-DICHLOROPROPENE 5 Li 75-15-0 CARBON DISULFIDE . . . . . 5 2-CHLORGETHYLVINYLETHER 10 5 U 110-75-8 75-35-4 1,1-DICHLOROETHENE . . . . 5 Li 75-35-3 1,1-DICHLOROETHANE . . . . 5 U 75-25-2 10 4-METHYL-2-PENTANONE . . . 5 u 156-60-5 TRANS-1, 2-DICHLOROETHENE . 108-10-1 CHLOROFORM . . . . . . . . 2-HEXANONE . . . . . . 10 U 67-66-3 5 H 591-78-6 5 11 TETRACHLOROETHENE . . . . 5 1,2-DICHLOROETHANE . . . . 127-18-4 107-06-2 1, 1, 2, 2-TETRACHLORGETHANE 10 78-93-3 10 U 79-34-5 TOLUENE . . . . . . . . . . . . 71-55-6 1,1,1-TRICHLOROETHANE . . 5 · U 108-88-3 CARBON TETRACHLORIDE . . . 5 U 108-90-7 CHLOROBENZENE . . . 5 56-23-5 VINYL ACETATE . . . . . . ETHYLBENZENE . . . . . . . 108-05-4 18 U 100-41-4 5 5 11 100-42-5 STYRENE . . . . . . . . . 75-27-4 BROMODICHLOROMETHANE . . . TOTAL XYLENES . . . . . .

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

NR-Not Required

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

CASE NO: 7410

ORGANICS ANALYSIS DATA SHEET

### (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

GPC CLEANUP YES X NO LOW CONCENTRATION: SEPARATORY FUNNEL EXTRACTION YES DATE EXTRACTED/PREPARED: 06/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION X YES DATE ANALYZED: 1. CONCIDIL FACTOR: PERCENT MOISTURE: (DECANTED)

CAS NUMBER		UG/	L.	CAS NUMBER		UG/	L ·
108-95-2	PHENOL	10	Ų	83-32-9	ACENAPHTHENE	10	U
111-44-4	BIS(2-CHLOROETHYL)ETHER .	10	U	51-28-5	2,4-DINITROPHENOL	50	U
95-57-8	2-CHLOROPHENOL	10	ย	100-02-7	4-NITROPHENOL	50	IJ
541-73-1	1,3-DICHLOROBENZENE	10	บ	132-64-9	DIBENZOFURAN	10	u i
106-46-7	1,4-DICHLOROBENZENE	10	U	121-14-2	2,4-DINITROTOLUENE	10	U
100-51-6	BENZYL ALCOHOL	10	Ü	686-28-2	2,6-DINITROTOLUENE	10	U
95-50-1	1,2-DICHLOROBENZENE	10	U	84-66-2	DIETHYLPHTHALATE	10	U
95-48-7	2-METHYLPHENOL	10	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	18	U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	10	U	86-73-7	FLUORENE	10	U
196-44-5	4-METHYLPHENOL	10	บ	100-10-6	4-NITROANILINE	50	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	U	534-52-1	4.6-DINITRO-2-METHYLPHENOL	50	UWLK
67-72-1	HEXACHLOROETHANE	10	U	86-30-6	N-NITROSODIPHENYLAMINE (1)	10	,du
98-95-3	NITROBENZENE	10	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	10	U
78-59-1	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	18	U
88-75-5	2-NITROPHENOL	10	U	87-86-5	PENTACHLOROPHENOL	50	U
105-67-9	2,4-DIMETHYLPHENOL	10	U	85-01-8	PHENANTHRENE	10	U
65-85-6	BENZOIC ACID	50	U	120-12-7	ANTHRACENE	10	U
111-91-1	BIS(2-CHLORGETHOXY)METHANE	10	U	84-74-2	DI-N-BUTYLPHTHALATE	10	U
120-83-2	2,4-DICHLOROPHENOL	10	U	206-44-0	FLUORANTHENE	10	U
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	U
91-20-3	NAPHTHALENE	10	U	85-68-7	BUTYLBENZYLPHTHALATE	16	U
106-47-8	4-CHLORGANILINE	10	U	91-94-1	3,3'-DICHLOROBENZIDINE	20	Ų
87-68-3	HEXACHLOROBUTADIENE	10	U	56-55-3	BENZO(A)ANTHRACENE	10	υ
59-50-7	4-CHLORO-3-METHYLPHENOL .	10	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	24	
91-57-6	2-METHYLNAPHTHALENE	10	U	218-01-9	CHRYSENE	10	U .
77-47-4	HEXACHLOROCYCLOPENTABIENE	10	U	117-84-0	DI-N-OCTYL PHTHALATE	10	U
88-06-2	2,4,6-TRICHLOROPHENOL	10	U	205-99-2	BENZO(B)FLUCRANTHENE	10	U
95-95-4	2,4,5-TRICHLOROPHENOL	50	U	207-08-9	BENZO(K)FLUORANTHENE	10	U
91-58-7	2-CHLORONAPHTHALENE	10	U	50-32-8	BENZO(A)PYRENE	10	U
88-74-4	2-NITROANILINE	50	U	193-39-5	INDEMO(1,2,3-CD)PYRENE	10	U
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZ(A.H)ANTHRACENE	10	U
208-96-8	ACENAPHTHYLENE	10	IJ	191-24-2	BENZO(G.H.I)PERYLENE	10	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . .

Case No: 7410

Sample Number ah644

Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

Concentration: [Low] Medium (Circle one)

Date Extracted/Prepared: 15-Jun-87

Date Analyzed: 07-Jul-87

Conc/Dil Factor:

Percent Moisture(decanted)

,

1 NR SPC Cleanup Yes [x]-No
Separatory Funnel Extraction Yes
Continuous Liquid-Liquid Extraction [x] Yes

CAS	•	[ug/L] or	цд/Кд
Number			
319-84-6	Alpha-BHC	0.05	U
319-85-7	Beta-BHC	0.05	iJ
319-86-8	Delta-BHC	0.05	IJ
58-89-9	Gamma-BHC (Lindane)	0.05	U
76 <b>-44-</b> 8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	IJ
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.1	U
72-55-9	4,4'-DDE	0.1	Ü
72-20-B	Endrin	0.1	U
33213-65-9	Endosulfan II	0.1	U
72-54-8	4.4'-DDD	0.1	IJ
1-31-07-8	Endosulfan Sulfate	0.1	U
50-29-3	4,4'-DDT	0.1	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin Ketone		U
57-74-9	Chlordane		_
8001-35-2	Toxaphene	1	U
12674-11-2	Aroclor-1016		
11104-28-2	Aroclor-1221		-
11141-16-5	Aroclor-1232		_
53469-21-9	Aroclor-1242		
12672-29-6	Aroclor-1248		_
11097-69-1	Aroclor-1254		_
11096-82-5	Aroclor-1260	1	U

Vi = Volume of extract injected (ul)

Vs = Volume of water extracted (ml)

Ws = Weight of sample extracted (g)

Vt = Volume of total extract (ul)

Vs = 1000

or Ws =

۷t =

10000

Vi = 3.0

Form I



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703/557-2490 • FTS/557-2490

Sample Number AH 643

Case Number:	2 SAMPLE C	ONCENTRATI	ON 4 Sh	ip To:	
10 10 04 (Date	(0	Check One)		]	. <u>-</u> .
នេះ នៅទី សម្រាស់ ខេត្ត នេះ មេខេត្ត នេះ	e Manager ent Offic	e, retaining the tast p	ago ) which do by	WIE LIOU	•
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Sample Site Name/Code:		um Concentration	ļ — <b>,</b>		
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CALCOPY FOR RETURN TO SMO

### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-04 SAMPLE MATRIX:

WATER

DATA RELEASE AUTHORIZED BY: Www.

CASE NO: QC REPORT NO: 7410 CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

### VOLATILE COMPOUNDS

CONCENTRATION:

LOW

. DATE EXTRACTED/PREPARED:

DATE ANALYZED:

CONC/DIL FACTOR:

06/15/87

1.

PH NR

PERCENT HOISTURE: (NOT DECANTED)

NR

CAS NUMBER	UG/	L	CAS NUMBER	•	UG/	L
74-87-3 CHLOROMETHANE	10	U	78-87 <b>-</b> 5	1,2-DICHLOROPROPANE	5	U
74-83-9 BROHOMETHANE	10	U	10061-02-6	TRANS-1,3-DICHLOROPROENE .	5	U
75-01-4 VINYL CHLORIDE	10	U	79-01-6	TRICHLOROETHENE	5	U
75-80-3 CHLOROETHANE	10	U	124-48-1	DIBROMOCHLOROMETHANE	5	U
75-09-2 METHYLENE CHLORIDE	1	J	79-00-5	1,1,2-TRICHLORGETHANE	5	U
67-64-1 ACETONE	10	U	71-43-2	BENZENE	5	U
75-15-0 CARBON DISULFIDE	5	U	10061-01-5	CIS-1.3-DICHLOROPROPENE .	5	ย
75-35-4 1,1-DICHLOROETHENE	5	U	110-75-8	2-CHLOROETHYLVINYLETHER .	10	ប
75-35-3 1,1-DICHLOROETHANE	5	U	75-25-2	BROMOFORM	5	U
156-60-5 TRANS-1,2-DICHLORGETHENE .	5	U	108-10-1	4-METHYL-2-PENTANONE	10	U
67-66-3 CHLOROFORM	5	U	591-78-6	2-HEXANONE	10	U
107-06-2 1.2-DICHLOROETHANE	5	U	127-18-4	TETRACHLOROETHENE	5	U
78-93-3 2-BUTANONE	10	U	79-34-5	1,1,2,2-TETRACHLOROETHANE	10	U
71-55-6 1,1,1-TRICHLOROETHANE	5	U	108-88-3	TOLUENE	5	U
56-23-5 CARBON TETRACHLORIDE	5	U	108-90-7	CHLOROBENZENE	5	U
108-05-4 VINYL ACETATE	10	U	100-41-4	ETHYLBENZENE	5	U
75-27-4 BROMODICHLOROMETHANE	5	U	100-42-5	STYRENE	5	U
				TOTAL XYLENES	5	U

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED NR - No + Required VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

PERCENT MOISTURE: (DECANTED)

CASE NO: 7410

ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

YES X NO GPC CLEANUP CONCENTRATION: LOW SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: @6/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION DATE ANALYZED: CONC/DIL FACTOR:

					•		
CAS NUMBER		UG/	'L	CAS NUMBER	· ·	UG/	L ,
108-95-2	PHENOL	10	U	83-32-9	ACENAPHTHENE	10	U
111-44-4	BIS(2-CHLOROETHYL)ETHER .	10	U	51-28-5	2,4-DINITROPHENGL	50	U
95~57-8	2-CHLOROPHENOL	10	U	100-02-7	4-NITROPHENOL	50	ม
541-73-1	1,3-DICHLOROBENZENE	10	U	132-64-9	DIBENZOFURAN	10	U
106-46-7	1,4-DICHLOROBENZEME	10	IJ	121-14-2	2,4-DINITROTOLUENE	10	U .
100-51-6	BENZYL ALCOHOL	10	U	606-20-2	2.6-DINITROTOLUENE	10	U
95-50-1	1,2-DICHLOROBENZENE	10	U	84-66-2	DIETHYLPHTHALATE	10	U
95-48-7	2-METHYLPHENOL	10	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	10	U
39438-32-9	8IS(2-CHLOROISOPROPYL)ETHER	10	U	86-73-7	FLUORENE	10	U .
106-44-5	4-METHYLPHENOL	10	IJ	100-10-6	4-NITROANILINE	50	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	Ų	534-52-1	4,6-DINITRO-2-METHYLPHENOL	50	U WLIK
67-72-1	HEXACHLOROETHANE	10	U	86-30-6	N-NITROSCOIPHENYLAMINE (1)	10	<b>y</b> /u
98-95-3	NITROBENZENE	10	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	10	Ü
78-59-1	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	10	U .
88-75-5	2-NITROPHENOL '	10	U	87-86-5	PENTACHLOROPHENOL	50	U
105-67-9	2,4-DIMETHYLPHENOL	10	U	85-01-8	PHENANTHRENE	10	U
65-85- <b>0</b>	BENZOIC ACID	50	U	120-12-7	ANTHRACENE	10	U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	18	U	84-74-2	DI-N-BUTYLPHTHALATE	10	U
120-83-2	2,4-DICHLOROPHENOL	10	U	206-44-0	FLUORANTHENE	10	U
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	บ
91-26-3	NAPHTHALENE	10	U	*85-68-7	BUTYLBENZYLPHTHALATE	10	U
106-47-8	4-CHLOROANILINE	10	U	91-94-1	3,3'-DICHLOROBENZIDINE	20	U .
87-68-3	HEXACHLOROBUTADIENE	10	U	56-55-3	BENZO(A)ANTHRACENE	10	บ
59-50-7	4-CHLORO-3-METHYLPHENOL .	10	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10	U
91-57-6	2-METHYLNAPHTHALENE	10	U	218-01-9	CHRYSENE	10	U.
77-47-4	HEXACHLOROCYCLOPENTADIENE	10	U	117-84-0	DI-N-OCTYL PHTHALATE	10	U
88-06-2	2,4,6-TRICHLOROPHENOL	10	Ü	205-99-2	BENZO(B)FLUORANTHENE	10	U.
95-95-4	2,4,5-TRICHLOROPHENOL	50	U	207-08-9	BENZO(K)FLUORANTHENE	10	U
91-58 <del>-</del> 7	2-CHLORONAPHTHALENE	10	U	50-32-8	BENZO(A)PYRENE	10	U ,
88-74-4	2-NITROANILINE	50	U	193-39-5	INDENO(1,2,3-CD)PYRENE	10	บ
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZ(A,H)ANTHRACENE	10	U
208-96-8	ACENAPHTHYLENE	10	U	191-24-2	BENZO(G.H.I)PERYLENE	10	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . .



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703 557-2493, FTS 557-2493

Somple Number AH 643

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The Miles	y for your files.	r ja 	\$ 1 m	Sample Condition on Receipt (e.g., broken, no
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P.C. Box 818			•	<b>~</b> ~
Hazerdous Weste Investigati Sample Management Office			7	410013072

ONS ENAMEDANIEMENT PROTECTION ACCESS OF LOS RETORN TO SMO

Sample Number AHC43 RE

### **Organics Analysis Data Sheet**

(Page 1)

Laboratory Name: ETC/Toxicon  Lab Sample ID No:  Sample Matrix:  Data Release Authorized By: Warn Ln Juli	Case No: 7410  QC Report No: 7410  Contract No: 68-01-7148  Date Sample Received: 4/15/97					
Volatile Compounds						
Concentration: Low N	Medium (Circle One)					
Date Extracted/Prepared:	2 4 101 - 2					
Date Analyzed: NO PRACTION ANALYZED						
Conc/Dil Factor:pH						
Percent Moisture: (Not Dec	anted)					

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chloromethane	
74-83-9	Bromomethane	
75-01-4	Vinyl Chloride	
75-00-3	Chloroethane	
75-09-2	Methylene Chloride	
67-64-1	Acetone	
75-15-0	Carbon Disulfide	
75-35-4	1, 1-Dichloroethene	
75-34-3	1, 1-Dichloroethane	·
156-60-5	Trans-1, 2-Dichloroethene	
67-66-3	Chloroform	
107-06-2	1, 2-Dichloroethane	
78-93-3	2-Butanone	
71-55-6	1, 1, 1-Trichloroethane	
56-23-5	Carbon Tetrachloride	
108-05-4	Vinyl Acetate	I
75-27-4	Bromodichloromethane	

CAS		ug/Lorug/Kg
Number		(Circle One)
78-87-5	1, 2-Dichloropropane	
10061-02-6	Trans-1, 3-Dichloropropene	
79-01-6	Trichloroethene	
124-48-1	Dibromochloromethane	
79-00-5	1, 1, 2-Trichloroethane	
71-43-2	Benzene	<u> </u>
10061-01-5	cis-1, 3-Dichloropropene	
110-75-8	2-Chloroethylvinylether	
75-25-2	Bromoform	
108-10-1	4-Methyl-2-Pentanone	
591-78-6	2-Hexanone	
127-18-4	Tetrachloroethene	
79-34-5	1, 1, 2, 2-Tetrachloroethane	
108-88-3	Toluene	•
108-90-7	Chlorobenzene	
100-41-4	Ethylbenzene	
100-42-5	Styrene	
	Total Xylenes	

### **Data Reporting Qualifiers**

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

- Value If the result is a value greater than or equal to the detection limit,
  - U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U(e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.
  - J. Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10.1). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3.1.
- C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides≥10 ng 'ul in the final extract should be confirmed by GC/MS.
- B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
- Other Specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

7410013073

B

LABORATORY NAME: ETC/TOXICON

CASE NO:

131-11-3

208-96-8

99-09-2

7410

SAMPLE NUMBER AH643RE

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### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

GPC CLEANUP YES X NO LOW CONCENTRATION: SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: 07/14/87 CONTINUOUS LIQUID-LIQUID EXTRACTION YES DATE ANALYZED: Ø7/1A/87 CONC/DIL FACTOR: PERCENT MOISTURE: (DECANTED) UG/L CAS NUMBER UG/L CAS NUMBER 10 u 108-95-2 10 U 83-32-9 2,4-DINITROPHENOL BIS(2-CHLOROETHYL)ETHER ... 10 51-28-5 50 111-44-4 4-NITROPHENOL . . . . . . U 95-57-8 2-CHLOROPHENOL . . . . . . 10 100-02-7 50 541-73-1 1,3-DICHLOROBENZENE . . . 10 132-64-9 DIBENZOFURAN . . . . . . . . . 106-46-7 1,4-DICHLOROBENZENE . . 10 11 121-14-2 2.4-DINITROTOLUENE . . . . 10 U 100-51-6 BENZYL ALCOHOL . . . . . . 10 606-20-2 2,6-DINITROTOLUENE . . 10 U 1,2-DICHLOROBENZENE . . . DIETHYLPHTHALATE . . . . . 10 95-50-1 10 U 84-66-2 7005-72-3 4-CHLOROPHENYL-PHENYLETHER 10 U 95-48-7 2-METHYLPHENOL . . . . . . 10 FLUORENE . . . . . . . . . . . . 39638-32-9 BIS(2-CHLOROISOPROPYL)ETHER 10 10 ы 86-73-7 100-10-6 4-NITROANILINE . 50 11 106-44-5 4-METHYLPHENOL . . . . . . 10 N-NITROSO-DI-N-PROPYLAMINE 534-52-1 4,6-DINITRO-2-METHYLPHENOL 50 621-64-7 10 U N-NITROSODIPHENYLAMINE (1) 67-72-1 HEXACHLOROETHANE . . . . . 10 U 86-36-6 10 U 98-95-3 10 U 101-55-3 4-BROMOPHENYL-PHENYLETHER 10 HEXACHLOROBENZENE . . . . 78-59-1 ISOPHORONE . . . . . . . . 10 H 118-74-1 10 ш 88-75-5 2-NITROPHENOL . . . . . . u 87-86-5 PENTACHLOROPHENOL 50 10 U 105-67-9 2,4-DIMETHYLPHENOL . . . . 10 u 85-01-8 10 U BENZOIC ACID . . . . . . . 50 u 120-12-7 65-85-0 DI-N-BUTYLPHTHALATE . . . u BIS(2-CHLOROETHOXY) METHANE 84-74-2 10 111-91-1 10 -11 FLUORANTHENE . . . . . . 10 120-83-2 2,4-DICHLOROPHENOL . . . . 10 206-44-9 1,2,4-TRICHLOROBENZENE . . PYRENE . . . . . . . . . . . . 10 129-00-0 120-82-1 10 U BUTYLBENZYLPHTHALATE . . . 91-20-3 10 U 85-68-7 10 106-47-8 4-CHLOROANILINE . . . . . 10 U 91-94-1 3,3'-DICHLOROBENZIDINE . . 87-68-3 HEXACHLOROBUTADIENE . . . 10 Ш 56-55-3 BENZO(A)ANTHRACENE . . . . 10 u 59-50-7 4-CHLORO-3-METHYLPHENOL 10 117-81-7 BIS(2-ETHYLHEXYL) PHTHALATE 10 u 10 2-METHYLNAPHTHALENE . . . 218-01-9 91-57-6 10 U 117-84-0 DI-N-OCTYL PHTHALATE . . . 10 IJ 77-47-4 **HEXACHLOROCYCLOPENTADIENE** 2,4,6-TRICHLOROPHENOL . . BENZO(8) FLUORANTHENE . . . 88-06-2 10 205-99-2 U 95-95-4 2,4,5-TRICHLOROPHENOL . . 207-08-9 BENZO(K)FLUORANTHENE . 10 50 BENZO(A) PYRENE . . . . . . 2-CHLORONAPHTHALENE . . . 10 50-32-8 91-58-7 10 U INDENO(1,2,3-CD)PYRENE . . u 88-74-4 2-NITROANILINE . . . . . . 50 193-39-5 10

10 U

10 U

50

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

DIMETHYL PHTHALATE . . . . . .

ACENAPHTHYLENE . . . . . .

3-NITROANILINE . . . . . .

FORM I

53-70-3

191-24-2

10

11

DIBENZ(A, H) ANTHRACENE . . .

BENZO(G, H, I) PERYLENE . . .



# U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 813. Alexandria, Virginia 22313—703. 557-2493 • FTS 557-2493

Somple Number

AH 642

### ORGANICS TRAFFIC REPORT

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### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON

LAB SAMPLE ID NO: 4182-03

SOIL SAMPLE HATRIX:

DATA RELEASE AUTHORIZED BY: Worn La

7410 CASE NO: . QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

### VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/17/87

CONC/DIL FACTOR:

5.80 1. PH

13.0

PERCENT MOISTURE: (NOT DECANTED)

CAS NUMBER	UG/KG	CAS NUMBER	l	UG/K	.G
74-87-3 CHLOROMETHANE	11	J 78-87 <b>-</b> 5	1,2-DICHLOROPROPANE	6	U
74-83-9 BROHOMETHANE	11	J 10061-02-6	TRANS-1,3-DICHLOROPROENE .	6	U
75-01-4 VINYL CHLORIDE	11	J 79-@1-6	TRICHLOROETHENE	6	U
75-00-3 CHLOROETHANE	11	<b>∐</b> 124-48-1	DIBROMOCHLOROMETHANE	6	IJ
75-09-2 METHYLENE CHLORIDE	14	B 79-00-5	1,1,2-TRICHLOROETHANE	6	U
67-64-1 ACETONE	2	J 71-43-2	BENZENE	6	U
75-15-0 CARBON DISULFIDE	6	U 10061-01-5	CIS-1,3-DICHLOROPROPENE .	6	U
75-35-4 1,1-DICHLOROETHENE	6	u 110-75-8	2-CHLOROETHYLVINYLETHER	11	U
75-35-3 1.1-DICHLOROETHANE	6	u 75-25-2	BROMOFORM	6	U
156-60-5 TRANS-1, 2-DICHLORGETHENE	6	u 108-10-1	4-METHYL-2-PENTANONE	11	U
	6	_ IJ 591-78-6	2-HEXANONE	11	U
67-66-3 CHLOROFORM	6	u 127-18-4	TETRACHLOROETHENE	6	บ
78-93-3 2-BUTANONE	11	u 79-34-5	1,1,2,2-TETRACHLORGETHANE	11	U
71-55-6 1,1,1-TRICHLOROETHANE		u 108-88-3	TOLUENE	6	U
56-23-5 CARBON TETRACHLORIDE	6	บ 108-90-7	CHLOROBENZENE	6	U
	11	U 100-41-4	ETHYLBENZENE	6	ប
108-05-4 VINYL ACETATE 75-27-4 BROMODICHLOROMETHANE		U 100-42-5	STYRENE	6	U
13-71-4 BUOMBASCHERMANE	_	_	TOTAL XYLENES	6	U

- B COMPOUND WAS DETECTED IN THE GC BLANK.
- J REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.
- U COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING GUALIFIERS.

CASE NO: 7410

99-09-2

SAMPLE NUMBER AH642

### ORGANICS ANALYSIS DATA SHEET (PAGE 2)

### SEMIVOLATILE COMPOUNDS

GPC CLEANUP YES X NO LOW CONCENTRATION: SEPARATORY FUNNEL EXTRACTION DATE EXTRACTED/PREPARED: 06/15/87 CONTINUOUS LIQUID-LIQUID EXTRACTION YES DATE ANALYZED: **0**7/16/87 DIL FACTOR: 25.0 PERCENT MOISTURE: (DECANTED) 13.0

CAS NUMBER		UG/K	G	CAS NUMBER	•	UG/K	G
108-95-2	PHENOL	9500	U	83-32-9	ACENAPHTHENE	9500	u
111-44-4	BIS(2-CHLOROETHYL)ETHER .	9500	U	51-28-5	2,4-DINITROPHENOL	46000	U
95-57-8	2-CHLOROPHENOL	9500	U	100-02-7	4-NITROPHENOL	46000	U
541-73-1	1,3-DICHLOROSENZENE		U	132-64-9	DIBENZOFURAN	9500	U
106-46-7	1,4-DICHLOROBENZENE	9500	U	121-14-2	2,4-DINITROTOLUENE	9500	U
100-51-6	BENZYL ALCOHOL	9500	บ	606-20-2	2.6-DINITROTOLUENE	9500	U
95-50-1	1.2-DICHLOROBENZENE	9500	U	84-66-2	DIETHYLPHTHALATE	9500	U
95-48-7	2-METHYLPHENOL	9500	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	9500	U
39638-32-9	815(2-CHLOROISOPROPYL)ETHE	9500	U	86-73-7	FLUORENE	9500	U
106-44-5	4-METHYLPHENOL	9500	บ	100-10-6	4-NITROANILINE	46000	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9500	U	534-52-1	4.6-DINITRO-2-METHYLPHENOL	46888	ប
67-72-1	HEXACHLOROETHANE	9500	U	86-36-6	N-NITROSODIPHENYLAMINE (1)	9500	U
78- <b>7</b> 5-3	NITROBENZENE	9500	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	9500	U
78-59-1	ISOPHORONE	9508	U	118-74-1	HEXACHLOROBENZENE		IJ
88-75-5	2-NITROPHENOL	9500	U	87-84-5	PENTACHLOROPHENOL	46000	U
105-67-9	2,4-DIMETHYLPHENOL	9500	U	85-01-8	PHENANTHRENE	9500	U
65-8 <b>5-0</b>	BENZOIC ACID	46000	U	120-12-7	ANTHRACENE	9500	U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	9500	U	84-74-2	DI-N-BUTYLPHTHALATE	9500	U
120-83-2	2,4-DICHLOROPHENOL	9500	U	206-44-0	FLUORANTHENE	9500	U
120-82-1	1,2,4-TRICHLOROBENZENE	9500	IJ	129-00-0	PYRENE	9500	U
91-20-3	NAPHTHALENE	9500	U	85-68-7	BUTYLBENZYLPHTHALATE	9500	U
106-47-8	4-CHLORGANILINE	9500	IJ	91-94-1	3.3'-DICHLOROBENZIDINE	19000	U
87-68-3	HEXACHLOROBUTADIENE	9500	Ü	56-55-3	BENZO(A)ANTHRACENE		U
59-50-7	4-CHLORO-3-METHYLPHENOL .	95 <b>00</b>	U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	95 <b>00</b>	U
91-57-6	2-METHYLNAPHTHALENE	7500	U	218-01-9	CHRYSENE		U
77-47-4	HEXACHLOROCYCLOPENTABIENE	9500	U	117-84-0	DI-N-OCTYL PHTHALATE		U
88-06-2	2,4,6-TRICHLOROPHENOL	9500	Ü	205-99-2	BENZO(B)FLUORANTHENE	9500	U
95-95-4	2,4,5-TRICHLOROPHENOL	46000	U	207-08-9	BENZO(K)FLUORANTHENE	9500	U
91-58-7	2-CHLORONAPHTHALENE	9504	U	50-32-8	BENZO(A) PYRENE	9500	U
88-74-4	2-NITROANILINE	46000	U	193-39-5	INDENO(1,2,3-CD)PYRENE	9500	U
131-11-3	DIMETHYL PHTHALATE	9500	U	53-70-3	DIBENZ(A,H)ANTHRACENE		Ū
208-96-8	ACENAPHTHYLENE	9500	U	191-24-2	BENZO(G.H.I)PERYLENE	9500	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

3-NITROANILINE . . . . . 46000 U

Laboratory Name: ETC-Toxicon Laboratories, Inc.

Case No:

7410

Sample Number AH642

### Organics Analysis Data Sheet (Page 3) Pesticides/PCBs

[x]-No Yes **GPC Cleanup** (Circle one) Concentration: [Low] Medium Separatory Funnel Extraction Date Extracted/Prepared: 15-Jul-87 Continuous Liquid-Liquid Extraction Date Analyzed: 25-Jul-87 Conc/Dil Factor: 0 Percent Moisture(decanted) uq/L or [ug/Kg] CAS Number 46 U Alpha-BHC.... 319-84-6 Beta-9HC ..... 46 U 319-85-7 46 U Delta-BHC..... 319-86-8 46 U Gamma-BHC (Lindane) ..... 59-89-9 Heptachlor ..... 46 U 75-44-8 46 U Aldrin ...... 309-00-2 46 U Heptachlor Epoxide..... 1024-57-3 46 U Endosulfan I 959-98-8 92 U Dieldrin ..... 60-57-1 92 U 4.4'-DDE ..... 72-55-9 92 U Endrin ..... 72-20-B 92 U Endosultan II 33213-65-9 92 U 4,4'-DDD ..... 72-54-8 92 U Endosulfan Sulfate..... 1-31-07-8 92 U 4,4'-DDT ...... 50-29-3 Methoxychlor ..... 460 U 72-43-5 Endrin Ketone ..... 92 U 53494-70-5 Chlordane ..... 460 U 57-74-9 920 U Toxaphene ..... 8001-35-2 Aroclor-1016 ..... 460 U 12674-11-2 460 U Aroclor-1221 ..... 11104-28-2 460 U Aroclor-1232 ..... 11141-15-5 460 U Argclor-1242 ...... 53469-21-9 460 U Aroclor-1248 ...... 12672-29-6 Aroclor-1254 ...... M15-920 # 32.00 11097-69-1 Aroclor-1260 ..... 920 U 11096-92-5 Vi = Volume of extract injected (ul) Vs = Volume of water extracted (ml) Hs = Weight of sample extracted (g) Vt = Volume of total extract (ul) Vi = 3.0Vt = 5000 or Ws = 1.5 Vs =

Yes

Yes

U.S. ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office P.O. Box 818, Alexandria, Virginia 22313—703/557-2490 • FTS/557-2490

Sample Number AH 641

(1) Case Number:	(2) SAMPLE C			<b>b</b> 10:
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6/2/87	n your convenience or	the back of each pa	pe di the OFRis and	OFC?
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(10) Special Handling Instruc				
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Alexandria, Varginie, 22813				. 41001000
20. Box 918				
The state of the s	•			

### ORGANICS ANALYSIS DATA SHEET

(PAGE 1)

LABORATORY NAME: ETC/TOXICON LAB SAMPLE ID NO: 4182-02

SAMPLE MATRIX:

WATER

DATA RELEASE AUTHORIZED BY: Warm Lu Kill

CASE NO: 7410 QC REPORT NO: 7410

CONTRACT NO: 68017148

DATE SAMPLE RECEIVED: 06/15/87

VOLATILE COMPOUNDS

CONCENTRATION:

LOW

DATE EXTRACTED/PREPARED:

DATE ANALYZED:

06/15/87

CONC/DIL FACTOR:

1. Pi

PH NR

PERCENT MOISTURE: (NOT DECANTED) NR

CAS NUMBER		UG/	'L	CAS NUMBER		UG	/L
74-87-3	CHLOROMETHANE	10	Ū	78-87-5	1,2-DICHLOROPROPANE	5	Ų
74-83-9	BRONOMETHANE ,	10	Ü	10061-02-6	TRANS-1,3-DICHLOROPROENE .	` <b>5</b>	Ü
75-01-4	VINYL CHLORIDE	10	U	79-01-6	TRICHLOROETHENE	5	U
75-00-3	CHLOROETHANE	10	U	124-48-1	DIBROMOCHLOROMETHANE	5	U
75-09-2	METHYLENE CHLORIDE	2	J	79-00-5	1,1,2-TRICHLORGETHANE	5	Ü
67-64-1	. ACETONE	2	J	71-43-2	8ENZENE	5	u
75-15-0	CARBON DISULFIDE	5	U	10061-01-5	CIS-1, 3-DICHLOROPROPENE .	5	U
75-35-4	1.1-DICHLOROETHENE	5	U	110-75-8	2-CHLORGETHYLVINYLETHER .	10	U
75-35-3	1,1-DICHLORGETHANE	i	J	75-25-2	BROMOFORM	5	U
156-60-5	TRANS-1,2-DICHLORDETHENE .	5	U	108-10-1	4-METHYL-2-PENTANONE	10	U
67-66-3	CHLOROFORM	5	u	591-78-6	2-HEXANONE	10	U
107-06-2	1,2-DICHLOROETHANE	5	Ū	127-18-4	TETRACHLOROETHENE	5	U
78- <b>93-3</b>	2-BUTANONE	10	U	79-34-5	1,1,2,2-TETRACHLOROETHANE	10	U
71-55-6	1,1,1-TRICHLOROETHANE	5	U	108-88-3	TOLUENE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U	108-90-7	CHLOROBENZENE	5	U
108-05-4	VINYL ACETATE	10	U	100-41-4	ETHYLBENZENE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U	100-42-5	STYRENE	5	น
					TOTAL XYLENES	5	U

J - REPORTED VALUE IS LESS THAN THE DETECTION LIMIT.

U - COMPOUND ANALYZED FOR BUT NOT DETECTED. THE REPORTED VALUE IS THE MINIMUM ATTAINABLE DETECTION LIMIT FOR THE SAMPLE.

NR-Not Required

SEE PAGE 1A FOR COMPLETE DEFINITIONS OF THE DATA REPORTING QUALIFIERS.

PERCENT MOISTURE: (DECANTED)

CASE NO:

7410

ORGANICS ANALYSIS DATA SHEET (PAGE 2)

#### SEMIVOLATILE COMPOUNDS

CONCENTRATION: LOW GPC CLEANUP YES X NO

DATE EXTRACTED/PREPARED: 06/15/87 SEPARATORY FUNNEL EXTRACTION YES

DATE ANALYZED: 07/10/87 CONTINUOUS LIQUID-LIQUID EXTRACTION

CONC/DIL FACTOR: 1.

(YES)

CAS NUMBER		UG/	Ł	CAS NUMBER		UG/	Ļ
108-95-2	PHENOL	10	Ü	83-32-9	ACENAPHTHENE	10	U
111-44-4	BIS(2-CHLORGETHYL)ETHER .	10	U	51-28-5	2,4-DINITROPHENOL	50	U
95-57-8	2-CHLOROPHENOL	10	U	100-02-7	4-NITROPHENOL	50	U
541-73-1	1,3-DICHLOROBENZENE	10	U	132-64-9	DIBENZOFURAN	10	U
106-46-7	1,4-DICHLOROBENZENE	10	U	121-14-2	2,4-DINITROTOLUENE	10	U
100-51-6	BENZYL ALCOHOL	10	บ	606-20-2	2,6-DINITROTOLUENE	10	U
75-50-1	1,2-DICHLOROBENZENE	10	U	84-66-2	DIETHYLPHTHALATE	10	U
95-48-7	2-METHYLPHENOL	10	U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	10	Ü
	BIS(2-CHLOROISOPROPYL)ETHER	10	U	86-73-7	FLUORENE	10	U
106-44-5	4-METHYLPHENOL	10	Ü	100-10-6	4-NITROANILINE	50	U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10	u	534-52-1	4,6-DINITRO-2-METHYLPHENOL	50	U
67-72-1	HEXACHLOROETHANE	10	u	86-3 <b>8</b> -6	N-NITROSODIPHENYLAHINE (1)	10	BU
98-95-3	NITROBENZENE	10	U	101-55-3	4-BROMOPHENYL-PHENYLETHER	10	U
78-59-1	ISOPHORONE	10	U	118-74-1	HEXACHLOROBENZENE	10	U
88-75-5	2-NITROPHENOL	10	U	87-86-5	PENTACHLOROPHENOL	50	U
105-67-9	2.4-DIMETHYLPHENOL	10	U	85-01-8	PHENANTHRENE	10	U
65-85-0	BENZOIC ACID	50	U	120-12-7	ANTHRACENE	10	U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	10	U	84-74-2	DI-N-BUTYLPHTHALATE	10	U
120-83-2	2,4-BICHLOROPHENOL	10	U	206-44-0	FLUORANTHENE	10	IJ
120-82-1	1,2,4-TRICHLOROBENZENE	10	U	129-00-0	PYRENE	10	Ü
91-20-3	NAPHTHALENE	10	U	85-68-7	BUTYLBENZYLPHTHALATE	10	U
106-47-8	4-CHLOROANILINE	10	U	91-94-1	3,3'-DICHLOROBENZIDINE	20	U
87-68-3	HEXACHLOROBUTADIENE	10	IJ	56-55-3	BENZO(A)ANTHRACENE	10	U
59-50-7	4-CHLORO-3-METHYLPHENOL	10	IJ	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10	U
91-57-6	2-METHYLNAPHTHALENE	10	U	218-01-9	CHRYSENE	10	U
77-47-4	HEXACHLOROCYCLOPENTADIENE	10	U	117-84-0	DI-N-OCTYL PHTHALATE	10	U
88-06-2	2,4,6-TRICHLOROPHENGL	10	U	205-99-2	BENZO(B)FLUORANTHENE	10	Ð
95-95-4	2,4,5-TRICHLOROPHENOL	50	U	207-08-9	BENZO(K)FLUORANTHENE	10	
91-58-7	2-CHLORONAPHTHALENE	10	U	50-32-8	BENZO(A)PYRENE	10	
88-74-4	2-NITROANILINE	50	U	193-39-5	INDENO(1,2,3-CD)PYRENE	10	U
131-11-3	DIMETHYL PHTHALATE	10	U	53-70-3	DIBENZ(A,H)ANTHRACENE	10	U
208-96-8	ACENAPHTHYLENE	10	U	191-24-2	BENZO(G,H,I)PERYLENE	10	U

(1) - CANNOT BE SEPARATED FROM DIPHENYLAMINE

99-09-2 3-NITROANILINE . . . . . 50 U